LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING

Judul Karya Ilmiah	:	Smart City Assessment for Sustainable City Development on Smart Governance: A Systematic Literature Review		
Jumlah Penulis	:	Tiga (Usman Ependi, Adian Fatchur Rochim, Adi Wibowo)		
Status Pengusul	:	Penulis ke 3 (Tiga)		
Identitas Prosiding	:	a. Judul Prosiding	:	2022 International Conference on Decision Aid Sciences and Applications (DASA)
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		c. Thn Terbit, Tempat Pelaks.	:	2022
		d. Penerbit/Organiser	:	IEEE Xplore
		e. Alamat Repository/Web	:	https://ieeexplore.ieee.org/document/9765192
		Alamat Artikel	:	https://doc-pak.undip.ac.id/15686/1/C32.pdf
		f. Terindeks di (jika ada)	:	Scopus

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☐ *Prosiding* Forum Ilmiah Nasional

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b. Ruang lingkup dan kedalaman pembahasan (30%)	7,5		7
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	7,5		7,5
d. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	7,5		7,5
Total = (100%)	**25**		**24,5**
Nilai Pengusul = 40% x ½ x 24,5 = 4,9			

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2. **<u>Ruang lingkup dan kedalaman pembahasan:</u>**
   Ruang lingkup paper ini membahas tentang review makalah yang terkait dengan konsep smart city yang merupakan salah satu konsep dalam pembangunan kota yang berkelanjutan. Pembahasan dari review sudah baik dan lengkap.
3. **<u>Kecukupan dan kemutakhiran data/informasi dan metodologi:</u>**
   Data-data hasil yang diperoleh dalam penelitian baik dengan didukung metodologi yang tepat dengan jumlah referensi kurang dari 5 tahun sejumlah 52.
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Semarang, 3 April 2023
Reviewer 1

Prof. Dr. Rahmat Gernowo, M.Si.
NIP. 196511231994031003
Unit Kerja: Fakultas Sains dan Matematika
Universitas Diponegoro
Jabatan Fungsional : Guru Besar

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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding		Nilai Akhir Yang Diperoleh
	Internasional (25)	Nasional ( )	
a. Kelengkapan unsur isi prosiding (10%)	2,5		2,7
b. Ruang lingkup dan kedalaman pembahasan (30%)	7,5		7
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	7,5		7
d. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	7,5		7,5
Total = (100%)	**25**		**24**
Nilai Pengusul = 40% x ½ x 24 = 4,8			

Catatan Penilaian artikel oleh Reviewer :

1. **<u>Kesesuaian dan kelengkapan unsur isi jurnal:</u>**
   Konten jurnal sudah lengkap sesuai dengan ketentuan yang berlaku.
2. **<u>Ruang lingkup dan kedalaman pembahasan:</u>**
   Ruang lingkup Paper ini membahas secara detail mengenai isu-isu penting dalam penilaian smart city, terutama pada indikator, kemampuan, pemangku kepentingan, kelemahan, dan faktor-faktor yang mempengaruhi tata kelola cerdas. Paper ini memiliki ruang lingkup yang cukup luas dan dalam pembahasannya juga cukup detail dan mendalam. Oleh karena itu, paper ini dapat dijadikan referensi yang berguna bagi para peneliti atau praktisi yang tertarik dalam pengembangan konsep smart city.
3. **<u>Kecukupan dan kemutakhiran data/informasi dan metodologi:</u>**
   Dalam studi tersebut, telah diperoleh sekumpulan informasi yang didukung oleh metodologi yang tepat dan didukung oleh referensi yang terbaru, yaitu kurang dari 5 tahun yang lalu, dengan total sebanyak 52.
4. **<u>Kelengkapan unsur dan kualitas terbitan:</u>**
   Paper ini dipublikasikan di sebuah conferences and proceedings 2022 International Conference on Decision Aid Sciences and Applications (DASA) diterbitkan oleh IEEE Xplore. Paper tersebut memiliki semua unsur yang diperlukan dengan sangat baik.

Semarang, 3 April 2023
Reviewer 2

Dr. Drs. Tarno, M.Si.
NIP. 196307061991021001
Unit Kerja: Fakultas Sains dan Matematika
Universitas Diponegoro
Jabatan Fungsional : Lektor Kepala

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Ependi, Usman[a] ; Rochim, Adian Fatchur[b] ; Wibowo, Adi[c]

Save all to author list

[a] Universitas Diponegoro, Doctoral Program of Information System, Semarang, 50275, Indonesia

[b] Universitas Diponegoro, Faculty of Engineering, Department of Computer Engineering, Semarang, 50275, Indonesia

[c] Universitas Diponegoro, Faculty of Science and Mathematics, Department of Informatics, Semarang, 50275, Indonesia

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Abstract

smart city is a concept in the sustainable development of cities. Smart city assessment measures smartness based on various smart city indicators. One of the indicators in a smart city is smart governance which aims to provide public services through ICT support. Various phenomena and issues in smart city assessment (smart governance) are crucial for exploration, especially in indicators, capabilities, stakeholders, weaknesses, and factors influencing smart governance . A

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literature review is an analysis model used for exploring smart city assessment . The phases performed consist of three main steps. The first phase of preparation consists of identifying requirements and developing a review protocol. The second implementation phase consists of searching, selecting, and extracting materials. The third phase is reporting (dissemination of results). This study reviews the SCA to answer various phenomena, especially indicators, capabilities, stakeholders, weaknesses, and smart governance factors. The review results show various issues and phenomena in the smart city assessment . The issue in the indicator aspect is the first step that needs to be fixed. The issue in the capability aspect lies in the characteristics of the city to be measured. The stakeholder aspect has a problem in involving various stakeholders to get the assessment results from multiple points of view. At the same time, the issue on the weakness aspect is paying attention to smart city goals and world standards. Stakeholders require more pay attention to the issue of smart city assessment . Therefore, the process and implementation adhere to the smart city 's standards and its objectives. Influences have been identified, namely policy domain, Trust, political & institutional environment, internet reach and use, and spatial characteristics. © 2022 IEEE.

Author keywords

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Time	In-door Space	Plenary Hall 1	Plenary Hall 2	Room1	Room2	Room3	Room4	Room5	Room6	Room7	Room8	Room9
Wednesday, March 23												
07:30-09:00	ATK: ATK Testing											
09:00-10:00	REG: Registration											
10:00-11:00		Opening: Opening Ceremony										
11:00-11:45		PN1: Plenary Session 1										
11:45-12:30		PN2: Plenary Session 2										
12:30-13:30	Lunch: Lunch											
13:30-14:50				PS1-1: PS1-1	PS1-2: PS1-2	PS1-3: PS1-3	PS1-4: PS1-4	PS1-5: PS1-5	PS1-6: PS1-6	PS1-7: PS1-7	PS1-8: PS1-8	PS1-9: PS1-9
14:50-15:10												
15:10-15:15	Break: Coffee Break											
15:15-16:00		SP1-1: Semi-Plenary 1-1	SP1-2: Semi-Plenary 1-2									
Thursday, March 24												
08:00-08:30	ATK+REG: ATK Testing and Registration											
08:30-09:50				PS2-1: PS2-1	PS2-2: PS2-2	PS2-3: PS2-3	PS2-4: PS2-4	PS2-5: PS2-5	PS2-6: PS2-6	PS2-7: PS2-7	PS2-8: PS2-8	PS2-9: PS2-9
09:50-10:10												
10:10-10:20	Break: Coffee Break											
10:20-11:40				PS3-1: PS3-1	PS3-2: PS3-2	PS3-3: PS3-3	PS3-4: PS3-4	PS3-5: PS3-5	PS3-6: PS3-6	PS3-7: PS3-7	PS3-8: PS3-8	PS3-9: PS3-9
11:40-12:00												
12:00-13:15	Lunch: Lunch											
13:15-14:00		PN3: Plenary Session 3										
14:00-15:40				PS4-1: PS4-1	PS4-2: PS4-2	PS4-3: PS4-3	PS4-4: PS4-4	PS4-5: PS4-5	PS4-6: PS4-6	PS4-7: PS4-7	PS4-8: PS4-8	PS4-9: PS4-9
15:40-16:00	Break: Coffee Break											
16:00-16:30		INFORMS BH: INFORMS BH										
16:30-17:15		SP2-1:	SP2-2:									

		Semi-Plenary 2-1	Semi-Plenary 2-2									

Friday, March 25

08:00-08:30	ATK+REG: ATK Testing and Registration											
08:30-10:10				PS5-1: PS5-1	PS5-2: PS5-2	PS5-3: PS5-3	PS5-4: PS5-4	PS5-5: PS5-5	PS5-6: PS5-6	PS5-7: PS5-7	PS5-8: PS5-8	PS5-9: PS5-9
10:10-10:20	Break: Coffee Break											
10:20-12:00				PS6-1: PS6-1	PS6-2: PS6-2	PS6-3: PS6-3	PS6-4: PS6-4	PS6-5: PS6-5	PS6-6: PS6-6	PS6-7: PS6-7	PS6-8: PS6-8	PS6-9: PS6-9
12:00-13:00	Lunch: Lunch											
13:00-13:45		PN4: Plenary Session 4										
13:45-15:25				PS7-1: PS7-1	PS7-2: PS7-2	PS7-3: PS7-3	PS7-4: PS7-4	PS7-5: PS7-5	PS7-6: PS7-6	PS7-7: PS7-7	PS7-8: PS7-8	PS7-9: PS7-9
15:25-15:35	Break: Coffee Break											
15:35-16:55				PS8-1: PS8-1	PS8-2: PS8-2	PS8-3: PS8-3	PS8-4: PS8-4	PS8-5: PS8-5	PS8-6: PS8-6	PS8-7: PS8-7	PS8-8: PS8-8	PS8-9: PS8-9
16:55-17:15												
17:15-17:45		Closing: Closing Ceremony										

Wednesday, March 23 7:30 - 9:00 (Asia/Bangkok)

ATK: ATK Testing

Wednesday, March 23 9:00 - 10:00 (Asia/Bangkok)

REG: Registration

Wednesday, March 23 10:00 - 11:00 (Asia/Bangkok)

Opening: Opening Ceremony

Wednesday, March 23 11:00 - 11:45 (Asia/Bangkok)

PN1: Plenary Session 1

Chair: Hatem Masri (University of Bahrain & University of Sousse, Bahrain)

Resiliency strategies in the supply chain: the case of aviation management

Wednesday, March 23 11:45 - 12:30 (Asia/Bangkok)

PN2: Plenary Session 2

Chair: Fouad Ben Abdelaziz (NEOMA Business School, France)

Digital Technologies: Opportunity or Challenge for Higher Education Institutions

Wednesday, March 23 12:30 - 13:30 (Asia/Bangkok)

Lunch: Lunch

Wednesday, March 23 13:30 - 15:10 (Asia/Bangkok)

PS1-1: PS1-1

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

13:30 ***Intelligent Data Management to Facilitate Decision-Making in Healthcare***

Mourya Pathapati (Symbiosis International Deemed University, India); Saikat Gochhait (Lavale & Symbiosis International: Deemed University, India)

The advancements in digitization are transforming the healthcare industry, one of the prominent industries producing critical data through patient care. The management of structured and processed data is becoming a challenge. Collecting, storing, and analyzing the data by efficiently reducing the complexity of data management makes the healthcare industry one of the most valuable industries. Creating meaningful and accurate disease predictions is critical in the healthcare sector. A study was conducted using VOSviewer software, which led to four clusters of keywords from different domains based on occurrences and relevance taken from 1500 documents from 1995 to 2021 from Web of Science. These keywords were mapped to the fields impacting the data management in Healthcare to explore the potential problems based on several types of research to establish a framework with an exploratory analysis. The methodology applied in this analysis describes the progress in data management in healthcare and can let researchers, scholars, and healthcare professionals gain insights for facilitating the healthcare decision makers.

13:50 ***Attention U-Net for Glaucoma Identification Using Fundus Image Segmentation***

Thisara Shyamalee and Dulani Meedeniya (University of Moratuwa, Sri Lanka)

Glaucoma is a fatal and worldwide ocular disease that can result in irreversible blindness to the optic nerve fibers of the eye. After cataracts, glaucoma is the main reason for blindness. Optic Disc (OD) and Optic Cup (OC) are important for fundus image segmentation. This study proposes attention UNet models with three Convolutional Neural Networks (CNNs)architectures, namely Inception-v3, Visual Geometry Group 19(VGG19), Residual Neural Network 50 (ResNet50) to segment fundus images. Several data augmentation techniques were used to avoid overfitting and achieve high accuracy. The attention UNet with ResNet50 as the encoder backbone showed the highest accuracy of 99.53% in segmenting OD using the RIM-ONE dataset among the considered configurations.

14:10 ***A Comparative Study of Heart Disease Prediction Using Classification Techniques***

Sara Abdulla Alshakrani (UOB, Bahrain); Sawsan Hilal (University of Bahrain, Bahrain)

In today's world, the most challenging thing for people is to sustain good health. One of the most significant impacts on people's health and lives is heart disease (HD). Heart failure is the number one cause of the greatest number of deaths worldwide. The goal of this paper is to evaluate classification techniques to see which one is the most accurate in predicting HD using R software. Statistical analysis helps in mining and examining the important factors of HD and can aid in determining whether or not a patient has a cardiac condition. In this paper, the potential of six classification techniques is used to predict heart failure. Namely, Logistic Regression (LR), Naïve Bayes (NB), Decision Tree (DT), K-Nearest Neighbor (KNN), Random Forest (RF), and Support Vector Machine (SVM). According to the results of the analysis, KNN outperforms the other classification techniques in HD diagnosis.

14:30 ***Predicting the Likelihood of Stroke by Analyzing the Clinical and Non-clinical Features***

Isa Yaser AlHeddi, Elham Abdulla Musaaed, Aysha Alkhayyat, Sawsan Hilal and Iyad Atoom (University of Bahrain, Bahrain)

Stroke is an interruption of the blood supply to the brain that leads to the death of brain cells. It is a primary cause for death and disability globally. Early recognition of individuals' susceptibility to stroke can help preventing it or reducing the severity thereof. This paper studied various clinical and non-clinical factors to build a model that predicts the occurrence likelihood of a stroke with the aim of utilizing the machine leaning capabilities to reduce stroke mortality rates. Machine learning classifiers were trained using the predictors from an online open source dataset. The implemented classifiers are the K Nearest Neighbor (KNN), Random Forest and Logistic Regression. Logistic Regression was found to provide the best predictions, though not significantly outperforming the other two classifiers. Age, glucose average level, ever married, and residence type were found to be the predictors that influence the response value the most. It is recommended that a larger data set is considered with more predictors. Moreover, separate prediction algorithms can be developed for children and adults.

14:50 ***Alzheimer's Disease Detection using Empirical Mode Decomposition and Hjorth parameters of EEG signal***

Digambar Puri (Ramrao Adik Institute of Technology, India); Pramod Haribhau Kachare (IIT Bombay & Ramrao Adik Institute of Technology, India)

Alzheimer's disease (AD) diagnosis is performed through the patient's interviews or questionnaires by an experienced

psychiatrist. This process is time-consuming, biases, and subject-specific. The present study aims to develop an automatic AD detection using Electroencephalogram (EEG) signal to alleviate these problems and to support neurologists. Each EEG signal is decomposed using the empirical mode decomposition (EMD) algorithm into nine Intrinsic mode functions (IMFs). Ten different features are extracted from these IMFs. Only Hjorth parameters (activity, mobility, complexity) are selected using the Kruskal-Wallis test. The selected features from EEG recordings of 23 subjects (AD-12 and NC-11) are used to train and test the Least-square support vector machine (LS-SVM) classifier with three different kernel functions. A maximum of 92.90% classification accuracy is obtained using the features of IMF-4 with 10-fold cross-validation. The results conclude that the proposed method can detect AD patients efficiently. The proposed method can further be used to detect other neurological disorders.

PS1-2: PS1-2

Chairs: Adamu Ali-Gombe (Mintra LTD & Robert Gordon University, United Kingdom (Great Britain)), Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India)

13:30 ***Detection of Oral Cavity Squamous Cell Carcinoma from Normal Epithelium of the Oral Cavity using Microscopic Images***

Chiagoziem Chima Ukwuoma and Zhiguang Qin (University of Electronic Science and Technology of China, China); Md Belal Bin Heyat (Shenzhen University, Shenzhen, China); Haider Khan (Orthopedics Surgery West China Hospital, China); Faijan Akhtar (University of Electronic Science and Technology of China, China); Mahmoud Saleh Masadeh (Hijjawi Faculty for Engineering, Yarmouk University, Irbid, Jordan); Olusola Bamisile (University of Electronic Science and Technology of China, China); Omar AlShorman (Najran University, Saudi Arabia); Grace U. Nneji (University of Electronic Science and Technology of China Chengdu, China)

The most common and widely known type of head and neck cancer is the Oral or mouth neoplasm, of which Oral Squamous Cell Carcinoma (OSCC) is the most popular. Despite its impact on Mortality, it is always diagnosed at a late stage due to the inefficiency of the screening models at the early detection stage. Early detection of oral cancer has a more than 83% survival rate, although the rate of early detection currently is 29%. Partnering with Oral cancer early detection, the deep learning model aids in detecting patterns of oral cancer cells. In this paper, we propose using ensemble pre-trained deep learning models while unifying the ensemble heads with more shared layers for the early detection of Oral cancer from microscopic images. Various state-of-the-art results are evaluated using transfer learning while using the Augmentor library to establish high-quality microscopic oral cancer image datasets. The proposed approach obtained a 0.1-0.6% improvement compared with transfer learning methods using 100x magnification and 400x magnification, thus illustrating the robustness of the model for low-quality and high-quality images. The result obtained proves that the proposed methodology is a promising method for the early detection and classification of oral cancer.

13:50 ***Applications of AI in Healthcare Sector for enhancement of medical decision making and Quality of Service***

Avinash Kumar (Symbiosis International University, India); Sujata Joshi (Symbiosis International University - Institute of Telecom Management, India)

The objective of this paper is to know about different AI implementations in healthcare and to analyze their effect on the healthcare sector which can bring significant changes in the medical world. The impact of AI on the healthcare sector has remained less focused in academic study hence it becomes important to study Artificial Intelligence applications that can assist in different fields of the medical industry and can help in decision making. Integrating AI in healthcare has been in talks but has not got the speed due to lack of research. This paper will help to address this gap by proposing a conceptual study of AI in healthcare and analyzing its different uses which can help to come up with some significant solutions for the healthcare sector and help in decision making. The case study approach has been used for this study in order to collect information with respect to different applications of AI in the healthcare field where it has been successful. Since AI can definitely act as an effective complement to doctors in the future, its implications are required on an urgent basis. This study will help healthcare professionals, medical

equipment providers, academicians, government officials in developing solutions for social wellbeing. This research paper will help in boosting the healthcare sector through the proper use of AI. AI is the future and is ever-growing and hence it needs to be researched thoroughly on a regular basis.

14:10 ***AI/ML enabled decision making in facilitating Robotic surgery***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Shrestha Chakraborty (Symbiosis International Deemed University, India)

Technological advancements have the potential to help every surgeon to enhance the quality of world-wide surgical care. Robotic surgery is currently at its inception stage but is expected to bloom with parallel advancements in computer science and artificial intelligence. [1] This engages a set of analytical learning algorithms and allows computer to accomplish things similar to those performed by the human brain. The objective of this paper would be to understand the present and future scope of robotic surgery utilizing AI/ML techniques. The study will revolve around how next-generation surgical robots will be inherent in optimizing a surgeon's skills productively, to achieve the pinnacle of precision during complicated surgical procedures. It will focus on how AI/ML helps in Robotic Spine Surgery, Minimally Invasive Surgery techniques, and ophthalmic surgeries. It will talk about the current limitations of robotic surgery and how with latest technological advancements it will be possible to overcome the shortcomings.

14:30 ***IoT enabled applications for Healthcare decisions***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Ibna Suhail (Symbiosis International Deemed University, India)

With the advent of digital transformation, technology has brought about a gigantic and momentous change in almost every industry. Internet of Things (IoT), being one of the most revolutionizing technology, has been impacting all fields of life immensely, but its impact on the healthcare industry has been particularly significant due to its cutting edge transition. The objective of this paper is to understand the role of IoT in this sector, its various use cases, and on how the devices assists medical professionals to function more efficiently and patients for an enhanced treatment. For instance, the Intelligent Asthma Monitoring wearable technology can forecast the oncoming asthma attack way before the person wearing it can comprehend. Apple watches, though not designed with this agenda in the first place, have now been a significant part in gathering information about people with the new blood oxygen measuring functionality, echocardiogram (ECG) tracking, and also detecting irregular heartbeat which is an indicator of Atrial Fibrillation (AFib). Furthermore, the paper will also address the probable challenges of the technology in the sector and understand the current and future adaptability of internet of medical thing devices.

14:50 ***Numerical bifurcation analysis of improved denatured Morris-Lecar neuron model***

Hammed Olawale Fatoyinbo (Massey University, Palmerston North, New Zealand); Sishu Muni (Massey University, New Zealand); Indranil Ghosh (Massey University, Palmerston North, New Zealand); Ibrahim Sarumi (King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia); Afeez Abidemi (Federal University of Technology Akure, Nigeria)

This work considers the analysis of improved denatured Morris-Lecar neuron model incorporating external periodic current and electromagnetic induction. First the dynamical behaviour of the original denatured Morris-Lecar model is addressed through phase plane and bifurcation analysis. It is shown that the model in response to variation of system parameters exhibits class II excitability. Then we investigate the effects of external periodic current and electromagnetic flux on the dynamical properties of the improved denatured Morris-Lecar neuron model. It is found that variation of the amplitude and angular frequency of the current and frequency gain of the magnetic flux lead to various types firing patterns ranging from regular periodic spiking to complex bursting. The improved model could be applied to research where simple models are required for physiological and pathophysiological responses in neurons.

PS1-7: PS1-7

Chair: Siddeeq Yousif Ameen (Advisor & Duhok Polytechnic University, Iraq)

13:30 ***Addressing Big Data Analytics Issues and Challenges Using Cloud Infrastructure***

Hanna Moosa (Asia Pacific University of Technology & Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

Data related terms are the buzzwords in research and academia in recent studies. Big Data, cloud computing, data analytics and artificial intelligence are some of the terms commonly seen in these studies. Big data and cloud computing integration opens many possibilities and opportunities to many different organisations and businesses throughout the world. There are many cloud computing service providers offering different service model and deployment model portfolios to choose from. Powerful analytical tools are being integrated with cloud computing such as Hadoop, Spark, Storm and so on to speed up the analytical process and maximise the benefit of cloud computing. This research focuses on the use of cloud computing in big data analytics. In this paper, different cloud computing models, available analytical tools and real-time data processing has been discussed with comparative analysis of these techniques. Critical evaluation of the existing solutions in major cloud computing providers is also discussed with future research scope.

13:50 ***Investigation and Development of Transparent Online Assessment: A Case Study at DPU***

Siddeeq Yousif Ameen (Advisor & Duhok Polytechnic University, Iraq)

The unprecedented COVID-19 incident created many challenges for higher education institutions. This case brought online examinations and E-learning to the spotlight after many universities refuged to e-assessment and online teaching. However, one of the main obstacles with online teaching and learning is the e-assessments transparency, especially in Iraq universities and Kurdistan Region universities. Thus, the aim of the paper is to understand the experiences of students and lecturers in Duhok Polytechnic University (DPU) situated at KRG Iraq with online assessment. The paper investigates via a questionnaire designed for this purpose the DPU participants with online assessments to show how are they are familiar with online exams, determine the most important problems that appeared during online examinations. The results from the questionnaire are analyzed and assessed to determine factors affecting the quality of online learning and e-assessment transparency. Finally, solutions suggestions with best measures to assure the transparency and quality of online examination are recommended.

14:10 ***Mediation Model of Relative Advantage in Mobile Payment***

Doni Purnama Alamsyah and Sandy Setiawan (Bina Nusantara University, Indonesia)

Interest in using mobile payments is influenced by the characteristics of mobile payments, such as the level of mobility. Currently, there are many mobile payment options, including e-wallets, their use continues to increase but user consistency still needs to be evaluated, this is aimed at maintaining sustainable technology usage. The purpose of this study is to examine the relationship between mobility, relative advantage, and intention to use. The final goal is to find a model that is able to increase the intention to use mobile payment, thereby maintaining the sustainability of technology use. The research method is carried out through a quantitative survey, a survey conducted on mobile payment e-wallet users in the city of Bandung as many as 227 respondents. The data from the respondents was obtained through a questionnaire that had previously been determined quantitatively. The data is processed through path analysis using the SmartPLS tool, while the inner and outer tests are used to test the research model. The research model was tested based on the results of the research hypothesis test. The results of the study stated that mobility as the main characteristic of mobile payment e-wallet has a positive relationship with the user's relative advantage. Relative advantage is stated to have a positive relationship with the intention to use mobile payment. However, it is immediately known that mobility does not have a significant relationship with intention to use. The findings of this study explain the importance of the relative advantages of mobile payments that need to be built by service providers in supporting the relationship between mobility and intention to use. The findings of this study support being able to support the creation of a sustainable for using technology in mobile payment in Indonesia, if the relative advantage can be considered as the value of the mobile payment

14:30 ***A Critical Review of Cloud Computing Environment for Big Data Analytics***

Dzulaisar Dzulhikam (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

Cloud computing offers a secure, scalable and widely accessible platform for enormous data distributed management systems. There are a variety of appealing characteristics in cloud computing for its consumer market as many cloud services and deployment strategies supplied by Cloud Service Providers (CSPs) are based on customer demands. Furthermore, cloud computing can store and handle a huge volume of information and do real-time big data analytics, presenting customers with

helpful information and patterns. Furthermore, many CSPs, such as AWS, Microsoft Azure, and Google Cloud Platform, offer benefits that help customers be more productive by executing activities according to their demands. This paper provides a critical review of the cloud computing environment provided by contemporary CSPs and learn about the present issues of cloud computing for big data analytics.

14:50 ***FedNet: Federated Implementation of Neural Networks for Facial Expression Recognition***

Md. Saiful Bari Siddiqui (BRAC University & Bangladesh University of Engineering & Technology, Bangladesh); Sanjida Ali Shusmita, Shareea Sabreen and Md. Golam Rabiul Alam (BRAC University, Bangladesh)

Overfitting is a significant obstacle in classification tasks like Facial Expression Recognition. Despite repeated attempts to negate the effects of overfitting by various researchers, the issue persists. This paper introduces FedNet, a Neural Network architecture inspired by the federated aggregation and averaging technique used in Federated optimization, which proposes a method to learn from data situated separately in edge devices. Our study proposes dividing training data into multiple shards and training each data shard individually using the same neural network, then aggregating and averaging each model's parameters after every few epochs. Training multiple models on different data shards and averaging the learned parameters allows the model to learn from the entire dataset while avoiding overfitting on a particular data shard. Convolutional Neural Networks were implemented using the Extended Cohn Kanade and the FER-2013 dataset to conduct this study. Our federated averaging-based implementation of CNNs achieved 99.1% accuracy and 100% accuracy for 8 and 7 emotion classifications, respectively, on CK+, beating the benchmarks for this dataset. It also achieved 65.6% accuracy on FER-2013 without using any transfer learning or data augmentation. Our model shows significantly better resistance against overfitting, resulting in better generalization compared to the other existing methods.

PS1-4: PS1-4

Chair: Tosporn Arreeras (Mae Fah Luang University, Thailand)

13:30 ***Consumer behavior in Online Flash Sale: Partial least squares structural equation modeling (PLS-SEM) analysis***

Bui Thanh Khoa (Industrial University of Ho Chi Minh City, Vietnam)

Flash sale programs have shown outstanding success in the four-wave of the Covid-19 pandemic in Vietnam. This study aims to examine factors that affect consumers' attitudes towards flash sales programs, thereby influencing their purchase intention in a certain period during which programs take place. The research illustrated that attitude plays a crucial role in investigating consumer behavior during flash sales, considering five factors including perceived usefulness, flash sales information quality, website quality, perceived perishability, and perceived scarcity. Using the PLS-SEM method, this study analyzed data collected from consumers who have been participating in e-commerce platforms in Vietnam. The result showed that all the five factors positively affect attitude towards flash sales and explain nearly 60% of its variance. Perceived perishability has a more significant impact than other factors. Also, the study indicated the intermediary role of attitude towards flash sales about purchase intention on flash sales. Subsequent discussions will explore the implication of optimizing flash sales programs.

13:50 ***Exploratory Data Analysis on SARS-CoV-2 Variants in India: especially Omicron (B.1.1.529) as of 6th December 2021***

Sashikanta Prusty, Srikanta Patnaik and Sujit Kumar Dash (SOA University, India)

SAR-CoV-2 is now spreading around the world, resulting in increased hospitalization and catastrophic fatality. The genome for coronavirus disease is vulnerable to abnormalities, which leads to genetic distortion and immunity loss. A novel variant of concern (VoC) with a new mutation having Pango lineage B.1.1.529, namely Omicron by WHO, was first found in South Africa at the end of November 2021. As of date, this new variant has already been spread rapidly in more than 58 countries and no doubt including India. In this work, Exploratory Data Analysis (EDA) analysis has been taken on different types of Covid-19 variants to date, where Omicron has demonstrated to be more increased transmissibility and infectious as compared to other variants. EDA offers several graphical representations to a better comprehension of the data and generates statistics for numerical data

present in the dataset, as of 6th December 2021. Starting from 2nd December 2021 India has reported 23 new omicron cases within four days, which is a major challenge both for the doctors and government. Moreover, the EDA technique has been carried out for finding a significant correlation with the total number of Omicron cases as of the date in India using a scatter plot. Also, a conceptual design has been configured in this project that describes the whole process of how EDA analysis has been carried out and a Treemap that looks forward to outliers in all countries representing more than twenty-five covid-19 variants.

14:10 *Sentiment and Statistical Analysis of Customer Reviews for Strategic Decision on Positioning and Marketing*

Shreyas Jain Lodha (Symbiosis Institute of Digital and Telecom Management, India); Madhavi Damle (Symbiosis International University (SIU), India)

Customer sentiment is a significant insight for any of its markets. In our used case, analysis for online shopping is done, giving far more precise marketing information using Natural Language Processing (NLP). The method extracted customers' opinions and sentiments about apparel and how they were introduced online. Data was extracted from chats, blogs, and other open sources working for the women's apparel brands. A large standardized dataset of 2.3 million responses for data mining for frequency, trend, colors, apparel type, and preferences was used. Findings from this study stated that customers prefer shopping online out of convenience and technology aids, but women's apparel has its ebbs and flaws in the case of online shopping. The study gave insights to allow marketers to resolve online shopping customer issues by analyzing their sentiments; these were precise outcomes for apparel management and decision-making. The implications were the insights where the NLP analysis was further exemplified using The Boston Consulting Group (BCG) Matrix employed to assist marketers about the weaker and stronger products online. This also aided in categorizing the merchandise under cash cow, star, question mark, and dog together, improving their shopping experience and from the marketing team's point of view to make better marketing decisions about their products. This method gives a precise categorization for differentiation and the agility needed for online marketing. We use "Machine Learning models" like "Support Vector Machine and Naïve Bayes" to calculate the accuracy, precision, and recall. Precise results were obtained by exploring these models and algorithms in Python.

14:30 *Weibull Distribution for Claims Modelling: A Bayesian Approach*

Hamza Abubakar (Universiti Sains Malaysia, Malaysia)

The Weibull distribution is extensively useful in the field of finance, insurance and natural disasters. Recently, It has been considered as one of the most frequently used statistical distribution in modelling and analyzing stock pricing movement and uncertain prediction in financial and investment data set, such as insurance claims distribution. It is well known that the Bayes estimators of the two-parameter Weibull distribution do not have compact form and the closed form expression of the Bayes estimators cannot be obtained. In this paper and Bayesian setting, it is assumed that the scale parameter of the Weibull model has a gamma prior under that assumption that its shape parameter is known. A simulation study is performed using random claims amount to compare the performance of Bayesian approach with traditional maximum likelihood estimators in terms of Root Mean Square Errors (RMSE) and Mean Absolute Error (MAE) for different sample sizes, with specific values of the scale parameter and shape parameters. The results have been compared with the estimated result via the maximum likelihood method. The result revealed that the Bayesian approach behaves similar to the maximum likelihood method when the sample size is small. Nevertheless, in all cases for both methods, the RMSE and MAE decrease as the sample size increases. Finally, applications of the proposed model to the insurance claim data set has been presented.

14:50 *Optimizing Multiple Sequence Alignment using Multi-Objective Genetic Algorithms*

Sohan Kumar Yadav (Higher Education, Government of Uttar Pradesh, India); Sudhanshu Kumar Jha (University of Allahabad, Prayagraj, INDIA & MHRD, Govt. of India, India); Sudhakar Singh (University of Allahabad, India); Pratibha Dixit (King George's Medical University, India); Shiv Prakash (University of Allahabad, India); Astha Singh (Motilal Nehru National Institute of Technology, Allahabad, India)

The multiple sequence alignment (MSA) issues are contingent on dropping an MSA to a rectilinear sketch for every alignment phase. Though, these indicate the damage of information desired for precise alignment, and gap scoring rate evidence. Single objective and Multi-objective techniques can be applied to the MSA problem. MSA can be classified into the NP-complete class of problems. Due to this classification, the genetic algorithm (GA) and variants which effectively solved the NP-complete class of problems can also solve the MSA problem to maximize the similarities among sequences. In this work, the dynamic programming-based algorithm for solving the MSA problems in bioinformatics has been discussed. A novel approach based on

GA and variants is suggested for solving an MSA problem. MSA Problem can be visualized as multi-objective optimization, so the Non-dominated Sorting Genetic Algorithm-II (NSGA II) can be applied. The single-objective and the multi-objective optimization problem are mathematically formulated and constraints related to both the objectives are identified. An adapted GA and NSGA-II are suggested to the MSA optimization problems.

PS1-3: PS1-3

Chairs: Zafrul Allam (University of Bahrain, Bahrain), Justin Kraemer (Mae Fah Luang, Thailand)

13:30 ***Action Research on Turnover Intention in a Chinese Private High School Teachers: Conceptual Paper***

Poh-Chuin Teo and Theresa C.F. Ho (Universiti Teknologi Malaysia, Malaysia); Ling Suan Choo (University of Bahrain, Bahrain); Yu Tongchao (Rushan Economic Development Zone, China); Siripat Chodchuang (Prince of Songkla University Surat Thani Campus, Thailand)

The problem of employee turnover rate is a concern of most companies. For private schools, the resignation of teachers and the loss of teaching staff are also persistent problems. Research methodology and A mixed-method research approach has been proposed, and appropriate data analysis techniques will also be recommended. It is believed that through the analysis of quantitative and qualitative data, and effective intervention measures for schools could be developed in solving the institutional issue. Also, by further analyzing and evaluating the effects of intervention measures, continuous improvements can be made on the human resource management of the school in order to achieve a sustainable workforce. The potential outcomes this conceptual paper would be set as a good reference for private high schools that are suffering with high turnover issue.

13:50 ***A Decision Model for Talent related challenges in the Telecom Sector in India***

Deepika Pandita (Symbiosis Institute of Business Management Pune, Symbiosis International (Deemed) University, Pune, India); Anusaya Yadav (Symbiosis International(DEEMED University), Pune. & Vivekanand Education Society's College of Arts, Science and Commerce, India)

The purpose of this paper is to bring forth how the telecom sector, which has undergone waving changes in recent years, are confronting challenges in talent acquisition. The HR managers from the telecom sector in India were approached and interviewed. The Structured Interview process underlined the challenges of HR managers for talent hunt. It further explores the prominent resorted technologies when it comes to talent acquisition. In the end, the authors present findings after collating results of extensive literature search and primary data. In line with constraints identified, suitable recommendations are laid down backed up by a model that provides a quick guide to technological adoption prior to integrating technology into talent acquisition.

14:10 ***Bibliometric Analysis of Research Visualizations of Knowledge Aspects on Burnout Among Teachers from 2012 to January 2022***

Zafrul Allam and Muzaffar Asad (University of Bahrain, Bahrain); Nasir Ali (University of Jeddah, Saudi Arabia); Azam Malik (Prince Sattam Bin Abdulaziz University, Saudi Arabia)

Considering the significance of knowledge in today's challenging academic environment, this particular bibliometric analysis focuses exclusively on burnout among teachers. In the present study, we examine bibliometric analyses of burnout among teacher research papers published and indexed in Scopus. For this study, 2356 research papers published from 2012 to 2022 (up to January) were selected. Map was were generated using the VOS viewer software tool. In the analysis of findings, incremental knowledge was revealed including trends for annual publications, top authors, funding sponsorships, subject area, type of publication, top contributing countries in publication, and correlation with relevant factors of teacher burnout. According to this analysis, there was a high number of research papers published in the year 2021. The most notable publication was done by Burke, R.J., the Institute of Education Sciences supported the most research, Social Sciences is ranked highest with publications, and in terms of research papers articles contributed more and the U.S. published the most research papers followed by Spain. Most importantly, future researchers can use these findings as a baseline before starting a study on teacher burnout.

14:30 ***Decision Model in the Development of Technopreneurship and The Adoption of IR4.0 Technologies***

Amirul Shahnoel Noeh and Pg Rozaidah Pg Hj Idris (University Brunei Darussalam, Brunei Darussalam); Muhammad Anshari (Universiti Brunei Darussalam, Brunei Darussalam)

Technology-based entrepreneurial activities are not uncommon in developing nations and emerging high-income economies. Attaining, adopting and developing higher complexities levels with the advances of IR4.0 technologies conflated with the desire to embrace digitalisation accelerated by the global pandemic have raised the development of technology-based starts-up to the forefront and spurring new types of works. Yet there is some hesitancy to adopt this pathway for unclear reasons. This paper aims to determine the development of prospective entrepreneurs and existing mainstream e-commerce start-ups in Brunei Darussalam in adopting these new technologies. Furthermore, the paper will identify barriers, drivers, and how prospective newcomers' decision-making process navigates the current socio-economic and technological trends. This can be explained through inference to the various theories of entrepreneurship, anthropological and sociological theory within the context of Brunei Darussalam. A qualitative inductive framework based on exploratory approaches includes reviewing the literature on technology-based start-ups, entrepreneurship development, interviewing and collecting data from various key stakeholders within the innovation ecosystems. The output of this paper will be a decision model highlighting the paths that a start-up can take to adopt IR4.0 technologies.

14:50 ***Model of knowledge-intensive teamwork development***

Bui Thanh Khoa (Industrial University of Ho Chi Minh City, Vietnam); Khánh Quốc Nguyễn (BTEC FPT International College, Vietnam)

Knowledge, indubitably, is significant capital in stimulating economic and organizational growth. Nevertheless, knowledge management in association with effective teamwork has still been considerably challenged in Vietnam. Inherited from the explicit knowledge management process and indispensable dimensions of the knowledge economy, this academic paper aims to develop a pertinent model of knowledge-intensive teamwork in the Vietnamese organizational context. Specifically, there are three dependent variables: education background, leadership, and Information and Communications Technologies (ICT) facility, whereas independent variables are knowledge acquisition, knowledge creation, knowledge application, knowledge revision, and knowledge-intensive teamwork. A quantitative analysis via an online questionnaire is undertaken with 306 participants working in Vietnam's production and service business sectors. The research results indicate that educational background, leadership, and ICT facility in the teamworking mechanism contribute to smooth operations of the whole knowledge management process, while coherent synergy of phrases in this process furnished knowledge-intensive teamwork. Therefore, the findings in this study underpin the framework for the upgrowth of continuous learning spirit, accountability, and collaboration of teamworking capabilities for the Vietnamese workforce.

PS1-8: PS1-8

Chair: Sagar Balu Gaikwad (Vidyalankar School of Information Technology, India)

13:30 ***Role of Work Engagement among Nurses Working in Government Hospitals: PLS-SEM Approach***

Sagar Balu Gaikwad (Vidyalankar School of Information Technology, India); Lata Swaminathan (NES Ratnam College of Arts, Science and Commerce, India)

Nursing is a profession that aims to protect, promote, and health of the people suffering through treatment. The current research studied job performance, work engagement, and turnover intentions among the nurses using the validated scales. The researcher tried to explore the impact of work engagement on job performance and turnover intention using PLS-SEM. The impact of job satisfaction on turnover intention is also explored. A validated scale on work engagement, job performance, and turnover intentions is used to collect the data from respondents. The researcher found that there is a significant positive relationship between work engagement and job performance, and there is no significant relationship between work engagement and turnover intentions among nurses working in government hospitals. An insignificant relationship is also found between job performance and turnover intention. The current research is helpful to all the government hospitals to identify work engagement

levels among nurses. The current research also describes the state of turnover intention among professional nurses. The current research describes the job performance level of nurses in government hospitals.

13:50 ***The Role of Government Ownership Towards the Performance Management Decisions in the Government-Linked Companies***

Amiruddin Haji Ismail (Universiti Brunei Darussalam, Brunei Darussalam)

Having government ownership of the government-Linked companies can influence the company's operation. However, literature mainly discusses the macro level's influence, such as financial performance. Few studies had looked at the micro-level management of these companies, especially on the organization's performance management. It can be assumed that these companies are responsible for their performance management; however, government ownership influences management decisions upon closer look. They may affect the setting up of the key performance indicators, the rewards for employees, and the rating system in the company. Hence, this research tries to shed light on how government ownership influences the performance management of these government-linked companies in Brunei Darussalam. The methodology used here is the semi-structured interviews with several government-linked companies and the investment holding company managing these companies. Future research can extend more on the government's management decision role towards the government-linked companies.

14:10 ***Work From Home After Covid-19: Machine Learning-Based Approach to Predict Employee's Choice***

Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Anuradha Herath, Ashansa Wijeratne and Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka)

Prior to the Covid-19 pandemic, Work from Home (WFH) was becoming an increasingly common practice, and during the pandemic, millions of employees across the globe were forced to shift into full-time WFH. It is expected that organizations will continue the WFH in a hybrid mode along with Work From Office (WFO) even after the pandemic. This study aims to predict the choice of employees on continuing WFH after the pandemic. The data set was collected using an online questionnaire shared among a sample of employees engaged in WFH during the pandemic. Naïve Bayes Artificial Neural Network (ANN), Random Forest, and Ensemble Learning-based approaches were used to generate the prediction models. Ensemble Learning-based approach was the best classifier compared to the other three classifiers and it obtained a 91.6% accuracy value. Naïve Bayes showed the lowest performance.

14:30 ***Females' Travel Intention in Post-Pandemic using Structural Modeling Analysis***

Chanittha Chansuk, Tosporn Arreeras, Chalailuk Chiangboon, Sorrawich Pumjampa, Nattawat Chotikool, Kantinun Phonmakham, Thanmit Yanasoi and Ratthanan Buddee (Mae Fah Luang University, Thailand)

Female tourists have emerged as one of the most important markets for the tourism sector. However, Coronavirus disease, also known as COVID-19, has led to a significant loss; the number of tourists has declined since the beginning of 2020. As a result, we aim to investigate the behaviors of female tourist between pre- and post-pandemic periods in Thailand. A total of 340 valid questionnaires were collected using an online survey. The valid datasets were examined using Structural Equation Modeling (SEM) with the theory of planned behavior (TPB) extension. Essential behaviors factors were considered, consist of tourist attitude (TA), travel norms (TN), and perceived behavioral control (PBC). In addition, according to the research gap, we included the hygiene constraint (HC) factors to examine Thai female tourists' intention to travel in the post-pandemic. The outcomes of this study will enable us to understand women's behaviors and the variables affecting travel intentions with aim of support with domestic tourism management after the crisis, ultimately boosting the ailing tourist industry.

14:50 ***The Competence Development of Local Communities in Chiang Rai for MICE Community - Based Tourism (CBT) Travelers***

Sarutanan Sopanik (Mae Fah Luang University, Thailand)

This research is considered to be a case - study research which aims to explore the competence level of three selected

community - based tourism (CBT) communities in Chiang Rai, Thailand, for high-value MICE travelers which is considered to be an untapped market for local CBT residents. The framework of this research derives from tourism organizations in Thailand and overseas with the intention to promote CBT tourism for MICE traveler groups. They define and evaluate MICE industry competence underpinned by local community management, human capital and natural resources which differ from typical stakeholders in the MICE industry. As a result, the new set of MICE competence specifically for MICE CBT is to be created as a pilot research project for MICE CBT in Thailand.

PS1-5: PS1-5

Chairs: Vinay Kukreja (Chitkara University, Punjab, India), Surapong Uttama (Mae Fah Luang University, Thailand)

13:30 ***Automated Cars via Artificial Intelligence (AI)***

Satyam Mishra (Vietnam National University - International School, Vietnam)

This paper discusses researching a vehicle model using artificial intelligence; training its neural network using the AlexNet model, using YOLO for object detection phase, and for practical deduction and judging component we have used Open Neural Network Exchange format. Our Car model is agile and cost-efficient. It detects objects efficiently in front of it and movement of it is smooth. It moves through sensors in motors which makes it different than other models in the world. We created and managed to deploy a deep learning system using real-world visual input for everyday objects. We used a novel deep learning-based obstacle avoidance perspective for practical object detection training. Special data gleaned via the use of technologies and various sensors in this part could alter skill demand and achieve security levels. We built it from scratch and trained this model to avoid collision and follow a given path by using deep neural network-based training.

13:50 ***Crowd Analysis in Video Surveillance: A Review***

Ankit Tomar (Graphic Era Deemed to be University, India); Santosh Kumar (Graphic Era University, Dehradun, India); Bhasker Pant (Graphic Era Deemed to be University, India)

Crowd behavior investigation in images/videos is an important task applied in areas such as people counting, density estimation, emotion recognition, motion detection, and flow analysis, etc. The researchers devoted an excellent quality of work to deal with public issues such as crowd control, traffic monitoring, urban planning, vehicle counting in real-time; however, humanity did not get much success in handling these issues due to the limited cost of energy and time. For evaluation metrics, we need a year-wise analysis of used datasets, publications methodologies, and their performance, which is expected to yield good predictions and conclusions. Therefore, in this work, we have systematically and comprehensively revisited five year studies that conducted crowd analysis in video using deep learning techniques to make more effective research development and progress. We have got some new future directions from some of the prestigious survey works, which is a novel aspect of this study, that would provide potential and reliable solutions for investigating crowd behaviour in videos.

14:10 ***Applications of Internet of Things in Construction Projects***

Khalid Mhmoud Alzubi (Universiti Teknologi PETRONAS, Malaysia & Albalqa Applied University, Jordan); Wesam Salah Alaloul (Bandar Seri Iskandar & Universiti Teknologi PETRONAS, Malaysia); Marsail Ghaleb Al Salaheen (Universiti Teknologi PETRONAS & AlBalqa Applied University, Malaysia); Abdul Hannan Qureshi (Persiaran UTP, Seri Iskandar, Perak & Universiti Teknologi PETRONAS, Malaysia); Muhammad Ali Musarat and Aawag Mohsen Alawag (Universiti Teknologi PETRONAS, Malaysia)

The Internet of Things (IoT) is prevalent in almost all aspects of various industries and construction is not exempted. The implementation of IoT in construction improves the way infrastructure and buildings are managed, built, and monitor. Also, it is decreasing the limitation of traditional methods like error-prone, time and cost consuming, and exposure to dangers. The aim of the study is to review areas of implementation of the IoT in the construction industry. The research provides insight into several aspects where IoT can be adopted in the construction sector like safety, decision making, monitoring, and productivity

and performance applications, and the limitations of technologies used. This helps in understanding the areas where IoT can be implemented in the construction industry for better enhancement. The IoT adoption improves in completing construction projects with more convenience and how the use of new technologies for monitoring will result in an effective monitoring way. This leads to collect the data about the construction site effectively, accurately, and in real-time which will help the management to take effective decisions.

14:30 ***Performance Analysis of Patch Antenna for Wireless Communication***

S Kannadhasan (Cheran College of Engineering & Raja College of Engineering and Technology, India)

The design and optimization of rectangular patch antennas, as well as the comparison of H-shaped patch antennas and rectangular patch antennas, have been explored in terms of important characteristics including S-parameters, VSWR, axial ratio, bandwidth, and operating frequency. Using the FEM (Finite Element Method), a fresh method to optimization is used. This FEM approach allowed for more accurate calculations in the design of a Microstrip patch antenna, as well as an examination of the effects of different design elements such as antenna dimensions (L & W) and substrate. The suggested antenna is used to operate the various frequencies from 5.5 GHz to 10.5 GHz. A 50-microstrip feed line feeds the planned 'H' shaped Microstrip antenna. The design has been altered to reflect the improved outcomes.

14:50 ***Image-Based Wheat Mosaic Virus Detection with Mask-RCNN Model***

Deepak Kumar (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Wheat is one of the most vital crops around the globe. Due to wheat mosaic virus disease, there are a huge amount of yield quality losses. The mosaic virus is transmitted through curl mite summering hosts. Once the mosaic virus is transmitted, the whole wheat plant is damaged which decreases the wheat grain quality. Therefore, the detection of a mosaic virus on the wheat leaf is detected through the Mask-RCNN model. A total of 15,536 wheat images were captured through Canon camera in the Punjab region. Each wheat healthy leaf and mosaic virus in each wheat leaf was labelled through the VOTT tool. The individual wheat leaf and mosaic virus labelled data were used as ground truth data. The resnet-50 is used as the backbone in the Mask-RCNN model. The Mask-RCNN model segments each wheat leaf and detects the mosaic virus on each individual leaf. For segmentation of each individual leaf and mosaic virus disease detection, the mask-RCNN model achieves 88.19% and 97.16% detection accuracy properly.

Wednesday, March 23 13:30 - 14:50 (Asia/Bangkok)

PS1-9: PS1-9

Chair: Teerapun Tadniyom (Mae Fah Luang University, Thailand)

13:30 ***New Technology for Synthesis Gas Production from Energy Willow as a Sustainable Solution for the Sustainable Development of Ukrainian Energy Industry***

Andrii Panchuk, Myroslav Panchuk and Sviatoslav Kryshtopa (Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine)

At present, one of the main problems of Ukrainian economy is the insufficient provision of energy resources, as well as the reduction of energy intensity and carbon intensity of production. At the same time, the country has a significant potential of feedstock in the form of biomass for the development of renewable energy industry. Cultivation and processing of energy crops is considered in the paper as a means of additional production of energy, improvement of the environmental situation, and achievement of sustainable development goals. A new technology of synthesis gas production from energy willow was suggested. The technology is based on the process of oxidative torrefaction with further disposal of volatile substances and their thermal conversion into synthesis gas. Introduction of the developed technology is a significant step towards the improvement of torrefaction process, which is used to improve the technical properties of biomass and has significant sustainability benefits.
Keywords - sustainable solution, energy willow, oxidative method of torrefaction, synthesis gas.

13:50 ***Application of spatial remote sensing for air quality estimation: the case of the Jorf Lasfar region, Morocco***

Abdelmejid Rahimi, Ikram El Mjiri, Mohammed Bounif and Abdelkrim Bouasria (Chouaib Doukkali University, Morocco)

The Jorf Lasfar region, which is the subject of this study, is characterised by an establishment near its port, of OCP factories, a thermal power station, hydrocarbon storage units, and numerous establishments specific to the chemical agro-food sector that are likely to emit atmospheric aerosols. Consequently, air quality monitoring has become a necessity for assessing and monitoring the impact of air pollution on the health of the population. In this context, to highlight the state of the air, this region is only equipped with approximately ten permanent ground measurement stations. Unfortunately, insufficient ground-based air pollutant measurement stations have generated accurate microparticle concentration maps on a fine scale. Therefore, to compensate for the lack of measuring stations, we resorted to satellite remote sensing by exploiting the relationship between the air quality measurements provided by existing measuring stations and satellite images. Thus, given the correlation between aerosol rates measured in situ and data extracted from Landsat satellite images, maps derived from atmospheric scattering and surface temperature have enabled the extraction a certain amount of useful information to better understand atmospheric pollution in the Jorf Lasfar region. An analysis of these maps showed that the most significant correlation, in particular, was between aerosols in suspension and surface temperature (LST), as deduced from the thermal infrared band, with a correlation coefficient R of 0.79. Another correlation with atmospheric scattering calculated using the atmospheric correction of the satellite image by the FLAASH algorithm is also noteworthy but is relatively less significant than the first. Therefore, maps of atmospheric diffusion and surface temperature derived from the processing and analysis of Landsat satellite images will be considered a new source of information, allowing for a better understanding of the spatial distribution of aerosols, especially in areas where the number of measuring stations is very limited, such as the Jorf Lasfar region.

14:10 ***Algerian Strategy Planning on Workforce Allocation between Sectors at the 2030 Horizon Using Fuzzy Goal Programming Approach***

Mohammed Seghir Guellil (POLDEVA Laboratory, Algeria); Mohamed Hadj Ahmed (Faculty of Economics, Business and Management Sciences, MCLDL Laboratory, Algeria); Samir Ghouali (Faculty of Sciences and Technology, Mustapha Stambouli University, Algeria); Mostéfa Belmokaddem (Faculty of Economics, Business and Management Sciences, Algeria); Mohamed Benbouziane (University of Tlemcen & Laboratoire MIFMA, Algeria); Edeh Michael Onyema (Coal City University Enugu, Nigeria)

Goal programming models provide a method for analyzing and understanding multi-criteria and their effects on a subject. Real-world problems include uncertain data, which makes Fuzzy Target Programming (FGPs) most common. In this paper, we propose a FGP model that integrates optimal resource allocation to at the same time fulfill prospective goals in economic growth, energy use, workforce, and greenhouse gas (GHG) emission reduction linked to key economic sectors of Algeria. The model provides important learning opportunities for future leaders in key areas of masterminding and leadership. We demonstrate the legitimacy and materiality of the model with a numerical case that allows us to substitute non-renewable energy with renewable energy, and an optimal workforce allocation between sectors in Algeria.

14:30 ***A Study of Role-Play Method and Human Augmentation to Enhance Digital Content Creator***

Panit Thongdee (King Mongkut's University of Technology North Bangkok, Thailand); Pinanta Chatwattana (Electronics Engineering Technology, Thailand); Prachyanun Nilsook (King Mongkut's University of Technology North Bangkok, Thailand)

This research has designed and developed a The Role-Play Method Human Augmentation Learning Model to Enhance Digital Content Creator, aiming 1) to study and synthesize the framework for developing The Role-Play Method Human Augmentation Simulation Learning Model to Enhance Digital Content Creator, 2) To study the possibilities. Development approaches as models, there are 50 undergraduate students in digital media technology, Rajamangala University of Technology Tawan-Ok. Research content uses digital film production course content. Digital Media Technology Program in Multimedia Technology, Rajamangala University of Technology Tawan-Ok, 6 lessons, trialled in semester 2, academic year 2022, the method of conducting research is divided into 5 phases: Phase 1 synthesis of conceptual framework for developing The Role-Play Method Human Augmentation Learning Model to Enhance Digital Content Creator Phase 2 Synthesis of substanceist features. The

expected benefit is that it competes with Digital Content Creator that are suitable for the context of Thailand. Educational institutions that offer courses in relevant disciplines have guided them with Role-Play learning methods to develop Digital Content Creator.

Wednesday, March 23 13:30 - 15:10 (Asia/Bangkok)

PS1-6: PS1-6

Chair: Wan Hussain Wan Ishak (Universiti Utara Malaysia & College of Arts and Sciences, Malaysia)

13:30 ***Investigating on adolescent traveler habits, before and intra COVID-19 pandemic: the case study of Chiang Rai***

Tosporn Arreeras and Chanittha Chansuk (Mae Fah Luang University, Thailand); Mikiharu Arimura (Muroran Institute of Technology, Japan)

The COVID-19 has triggered an unprecedented worldwide crisis. Transportation has been one of the most significantly impacted. This paper examined the factors and satisfactions that influence the dynamic of selecting a mode of transportation among Mae Fah Luang University students. Before developing the inquiries and collecting 399 responses via the Internet stage, the analyst conducted inside and out interviews with 20 understudies. According to the research, students' travel habits changed both before and during the COVID-19 epidemic, which revealed that both travel determinants and public service efficiency judgments were important. When the COVID-19 comes into effect, impacted students need to change their travel behaviors accordingly.

13:50 ***Acceleration Of International Tourism Improves Digital Payments Usage: The Case Of Thailand***

Dzakiyy Hadiyan Achyar (Mae Fah Luang University, Thailand); Zata Hasyyati (Universitas Panca Budi, Indonesia); Hazhiyah Yumni (Universitas Malikussaleh, Indonesia); Fathir Wafda (PT Bukalapak.com Tbk, Indonesia)

This research examines the state revenue from international tourism on the rising usage of digital payment in Thailand from 2011 to 2020. The data are analyzed through multiple linear regression using the annual data of the World Bank and Thailand government. Surprisingly, the international tourism variable can explain 91 percent of the variation in digital payment usage in Thailand with the model is proven to be fit. Jarque Bera test shows the residuals are normal. Breusch-Godfrey Serial Correlation Lagrange Multiplier test proves that the residuals are free from serial correlation. Breusch-Pagan Godfrey depicts that the residuals are free from heteroskedasticity. In conclusion, there is a significant influence of the international tourism receipts on accelerated usage of digital payment in Thailand.

14:10 ***A Web-based Application for Interesting Place Recommendation***

Wan Hussain Wan Ishak (Universiti Utara Malaysia & College of Arts and Sciences, Malaysia); Fadhilah Binti Mat Yamin (Universiti Utara Malaysia & UUM College of Business, Malaysia)

Today, the Internet has become one of the most essential media for disseminating information, particularly in the field of tourism. When it comes to organising a trip, most people will seek assistance. Existing travel websites, on the other hand, lack a suggestion feature that can recommend ideal locations depending on the wants and requirements of customers. As a result, users had difficulty planning their vacations. In this article, an interesting place recommender system for travelers is proposed. The proposed system is a website application that provides a list of recommended places for users based on their background. In greater detail, this recommender system will compare the users' information to the history of other tourists and suggest a suitable trip destination for the user. The waterfall model, which is a step-by-step approach to designing an application, was used to develop this application. The usability testing had been conducted on 31 respondents by inviting them to use and test on the system. The results of the usability testing show that the proposed application is effective in assisting users in finding the information they seek. The respondents also addressed that they feel more convenient in planning their vacation with the support from the system.

14:30 ***A study into COVID-19 pandemic impacts elderly decision on shopping trip***

Inchalita Hiruntronchirapat, Kanisara Paripunyo and Tosporn Arreeras (Mae Fah Luang University, Thailand)

The aim of this study is to reconnoiter factors that affect travel behavior and decision making for a shopping trip of the elderly during the before and intra that COVID-19 pandemic. This is a quantitative that intends to determine key factors that affect elderly behavior in terms of private and public mode transportation. The study collected data from 400 elderly people of Thai nationality. Data was collected through Cochran unknown sample size computation from a population of people who were aged sixty and over in Thailand. Exploratory factor analysis was practiced for data analysis and grouping variables by rotation varimax that appear three main factors which were comfort travel; factors arising from the transportation service, cautious; the effects of external stimuli that raise concerns about the spread of the epidemic and reliability; travel convenience and assurance. The findings should be useful and helpful data source in term of doing research development, planning and in any purposes for transportation department or any organization.

14:50 ***Leadership style and its relationship to work satisfaction of the employees in the hospitality industry: a case study of AVANI Hotel and Convention Centre, Khon Kaen, Thailand***

Proychai Klakayan (Mae Fah Luang University, Thailand)

The purpose of this research is to explore the relationships between managers' leadership styles and employees' work satisfaction in the hospitality industry, a case study of AVANI Hotel and Convention Centre, Khon Kaen, Thailand. The study focused specially on the Path-Goal leadership theory from House (1971). This theory divides leadership styles into four types, which are directive, participative, achievement-oriented and supportive. The researcher then related these to the work satisfaction of employees in the AVANI Hotel and Convention Centre using secondary and primary researches. The primary research was conducted in two phases, which are quantitative and qualitative.

The results of this findings show that the predominant manager leadership style of AVANI Hotel and Convention Centre was participative and it had a direct positive influence on work satisfaction, such as the work environment. However, the employees of the AVANI Hotel and Convention Centre demonstrated less satisfaction with the pay/salaries, the work itself and the promotion as satisfier factors and more satisfaction with factors such as the work environment and the recognition. Some recommendations the researcher made, based on the finding, are improving the employees' performance and job rotation.

Wednesday, March 23 15:10 - 15:15 (Asia/Bangkok)

Break: Coffee Break

Wednesday, March 23 15:15 - 16:00 (Asia/Bangkok)

SP1-1: Semi-Plenary 1-1

Chair: Sawsan Hilal (University of Bahrain, Bahrain)

A multiple criteria approach for constructing a pandemic impact assessment composite indicator: The case of Covid-19 in Portugal

SP1-2: Semi-Plenary 1-2

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

Circular economy to combat climate change issue

Thursday, March 24 8:00 - 8:30 (Asia/Bangkok)

ATK+REG: ATK Testing and Registration

Thursday, March 24 8:30 - 10:10 (Asia/Bangkok)

PS2-6: PS2-6

Chairs: Narat Hasachoo (Mae Fah Luang University & School of Management, Thailand), Sumit Sakhuja (Chitkara University Punjab, India)

8:30 ***Predictive Analytics of Human Errors in the Fireworks Industry***

N Indumathi and R. Ramalakshmi (Kalasalingam Academy of Research and Education, India); Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Tayo Badrudeen (Obafemi Awolowo University, Nigeria); Chukwunonso Mmonyi (Afe Babalola University, Nigeria)

The town of Sivakasi in Tamil Nadu's Virudhunagar district in India produces majority of the country's consumption of firework items. Handling numerous chemicals is a necessary part of the firework industry's manufacturing process. As a result, the firework industry is commonly reported to be highly dangerous because of the hazardous nature of the chemicals used to create the sparkling effects during the ignition of firework crackers. Prior research has focused on harmful behaviors and hazardous conditions, pointing to human error as the primary cause of many accidents. According to the findings of the study, the majority of explosions were caused by the improper handling of hazardous chemicals and carelessness when making fireworks. Therefore a model was presented in this paper which aims to assess the likelihood of human error in the fireworks industry. The proposed method uses task analysis and prediction of human error to shape the performance elements. The model can also be used to examine potential accident scenarios. The results show that the presented greedy-based process compared with the rule mining-based approach gives better accuracy and outcomes for the prediction of human error possibilities in the fireworks industry.

8:50 ***A Literature Review on the Biomechanical Properties of Soliderability Materials***

Akanksha Ghai and Gaurav Kalia (Chitkara University, India)

Soliderability materials is playing a vital role for existence of human beings. The production of bio-implantation metallic alloys application has been discovered to focus on providing structural components with excellent biocomputing of chemical/ mechanical/biological processes. As there is a demand for extended human lifespan and implantation in patients of younger age groups, the fabrication of metallic alloys for bio-implantation application is focused on producing structural materials with extremely excellent mechanical, chemical, and biological biocompatibility. Biodegradation of the substances for example Zirconium (Zr), Titanium, Columbium, Molybdenum and Tantalum were used to create Ti alloys with high mechanical characteristics and a low Young's modulus. As a result, a new awareness of the rise of low-cost alloys with a lower point where it changes its stage is Ta, Cb, Mo, and Tungsten, emerged. It is accomplished by replacing these metals with less expensive, delinquency and soliderability metals including iron, manganese, tin, and silicon, which have strong mechanical qualities and do not degrade. The mechanical characteristics of soliderability materials are also shown in this research. As a result, Zinc (Zn), Magnesium (Mg), and Ti are commonly employed in biomedical materials to improve mechanical qualities.

9:10 ***Bumper Beam Composite Material Selection using Fuzzy Multi-Criteria Analysis***

Golam Kabir (Industrial Systems Engineering University of Regina, Canada); Sehul Rajendra Mehta and Anaamalaai Annamalai Senthilnathan (University of Regina, Canada)

Material selection has long been seen as a critical activity in both the design and product development processes. Inappropriate material selection can result in the product being remanufactured and reproduced at a later stage of development. This article conducts a decision-making study of bumper beams to avoid such scenarios, assisting designers in material selection. To accomplish this, a hybrid multicriteria decision-making analysis (MCDA) approach combining the fuzzy analytical hierarchy process (AHP) and the fuzzy technique for ranking preferences by the similarity of ideal solutions (TOPSIS) was designed. Carbon fibre reinforced in an epoxy matrix was discovered to be a more appropriate material for vehicle bumper beams. This

study will assist designers and product development personnel in making the optimal material selections for the automobile sector.

9:30 ***Evaluation Model for Operational Plans in the Business Macro Process of Reverse Logistics***

Marcele Elisa Fontana and Layza Melo (Universidade Federal de Pernambuco (UFPE), Brazil); Jose Leao (Universidade Federal de Pernambuco, Brazil)

The business macro process (BMP) of reverse logistics (RL) is formed by four operational plans, which in turn are composed of various processes. This article proposes a decision-making model based on identifying facilitators and barriers factors, helping managers evaluate operational plans in the BMP of RL in the company. For this, the model incorporates the Fuzzy Picture Set Fuzzy (PSF) to evaluate the influence of these factors and the MABAC method to aggregate the evaluations obtained on PFS. A case study was adopted to apply the evaluation model developed as a research strategy. As a result, the model was able to assist managers in evaluating the factors that most positively or negatively impact the execution of each operational plan in RL, reducing the manager's cognitive effort and directing the company's future investments.

9:50 ***Urban Consolidation: A Case For Food And Beverages Industry In Singapore***

Sumit Sakhuja (Chitkara University Punjab, India); Umang Soni (Netaji Subhas Institute of Technology, India); Chetan Sharma (Chitkara University Himachal Pradesh, India)

Urban logistics is a by-product of the economic activities that keep cities running smoothly. However, it has negative externalities such as traffic congestion and pollution, and it has an impact on the food and beverage business, which is affected by logistics activities. Inefficient last-mile delivery from suppliers to retailers results from deliveries being done using vehicles (vans) that do not run in full truckload (FTL). As a result, transportation resources are being wasted. Supplies in food and beverage supply chains are primarily perishable, and determining the appropriate inventory levels to maintain is a problematic issue. When food distribution is decentralized, it results in a high frequency of deliveries, leading to higher delivery costs. When it comes to logistics network design, the challenge at hand could be classified as one in which crucial decisions regarding facilities, modes of transportation, frequency of delivery, capacity, and pricing must be made. The purpose of this study is to examine two significant aspects: the logistics patterns of urban food deliveries and the design of the model for last-mile delivery. Another author aims to develop the last mile redistribution model for final delivery, which is proposed in the paper as a solution technique for data collection and analysis.

PS2-1: PS2-1

Chair: Wangchuk Rabten (School of Management, Mae Fah Luang University, Thailand)

8:30 ***Use of VR Technologies for Better Healthcare Decisions***

Somit Asthana and Prasanna Kulkarni (Symbiosis International Deemed University, India)

New technological advancements like Augmented Reality (AR), virtual reality (VR), and Extended Reality (XR) are transforming conventional healthcare. Speedy developments in connectivity and "e-learning" have accelerated distribution of simulation techniques and structured courseware. With development of 5G and low latency technology, the application of AR/VR is becoming possible in medical science. Post pandemic, a new normal of hybrid healthcare services would emerge. These futuristic technologies will support healthcare industry operations with clinical documentation, administrative workflow and patient outreach. They are also offering advanced support such as image analysis, mobile treatment, and patient monitoring. This study looks at some of the real-life use cases of VR technologies in different verticals in healthcare sector. They can also be used for training and education purposes to instruct technical and non-technical skills. The simulator-based learning can be far more effective than conventional training. This study discusses many opportunities and challenges for healthcare institutions, regarding the implementation of contactless services and use of new and emerging technology trends. Based on the study of the technology and its feasibility, it discusses how VR technologies can lead to better healthcare decisions. It also discusses the scope and practical applications of wearable devices. which include head gear such as VR headsets, cameras, sensors, GPS, solid-state compasses etc.

8:50 ***Boosting Breast Cancer Classification from Microscopic Images using Attention Mechanism***

Chiagoziem Chima Ukwuoma and Gilbert C. Urama (University of Electronic Science and Technology of China, China); Md Belal Bin Heyat (Shenzhen University, Shenzhen, China); Haider Khan (Orthopedics Surgery West China Hospital, China); Faijan Akhtar (University of Electronic Science and Technology of China, China); Mahmoud Saleh Masadeh (Hijjawi Faculty for Engineering, Yarmouk University, Irbid, Jordan); Zhiguang Qin (University of Electronic Science and Technology of China, China); Chukwuemeka S. Ibegbulam (Federal University of Technology, Nigeria); Fiasam Linda Delali (University of Electronic Science and Technology of China Chengdu, Canada); Omar AlShorman (Najran University, Saudi Arabia)

Attention mechanism is one of the most recent and powerful deep learning approaches which have shown tremendous performance in detection and classification tasks, including medical imaging. Breast cancer is one of the leading causes of death among women worldwide; thus, early detection of this malignancy will help to reduce the number of fatalities. The accurate classification of benign and malignant tumors in microscopic breast images can give an efficient and relatively low-cost technique for breast cancer early detection. This paper proposes a deep learning model based on an attention mechanism. The proposed attention mechanism derives its input features from pre-trained models and passes its output through a Multilinear perceptron and SoftMax for classification. We trained all models on the ICIAR2018 Grand challenge Breast Cancer dataset and compared them with the pre-trained and ensemble models. For quantitative analysis, validation tests were conducted using the performance metrics for each approach. The suggested approach is proven successful, with classification results improving by +1-6%, potentially reducing human errors in the diagnosis process. Furthermore, our method outperforms state-of-the-art approaches in terms of accuracy, with a +3-8% improvement in performance results.

9:10 ***Big Data in Healthcare Transformation: A Short Review***

Ebrahim Abdulwasea Abdullah Ghaleb and Dhanapal Durai Dominic (Universiti Teknologi PETRONAS, Malaysia); Akram A. Almohammedi (South Ural State University, Malaysia); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia)

With the rising expense of healthcare and rising health insurance premiums, preventive healthcare and wellness are necessary. Additionally, the new wave of medical record digitization has ushered in a paradigm change in the healthcare business. As a result, the healthcare business is experiencing a surge in data volume, complexity, variety, and timeliness. As healthcare professionals explore ways to reduce costs while enhancing care processes, delivery, and management, big data appears as a viable option with the potential to alter the sector. This paradigm changes from reactive to proactive healthcare has the potential to result in total cost savings and eventually economic development. However, while the healthcare business leverages the potential of big data, privacy concerns remain a top priority as new threats and vulnerabilities emerge. We describe the state-of-the-art privacy challenges in big data related to the healthcare business in this study

9:30 ***Indian Healthcare Infrastructure Analysis during COVID-19 using Twitter Sentiments***

Noor Fatima, Mohd Belal, Kaushal Kumar and Rumi Sadaf (Aligarh Muslim University, India)

The COVID-19 pandemic has wreaked havoc on the worldwide economy. We employ semantic analysis to compare and assess the healthcare infrastructure of different Indian states with varying population and GDP levels. The goal is to (1) determine the relative lag in medical resources by state, (2) examine the states' responses to the COVID-19 economic crisis, and (3) recommend potential investments shortly based on the COVID-19 pandemic's findings. Our approach benefits from semantically analyzing tweets at the height of the most horrific second wave, which allows us to catch the tremors and quick shifts induced by wide-scale deaths. To approximate the infrastructure metrics, we leverage the social attitudes from Twitter data. The findings reveal that the lower expenditure on medical infrastructure is the primary challenge for the majority of the states in the country. Our research shows how data from state and city-specific Twitter posts may be utilized to comprehend local issues and opinions around healthcare leading to more directed and widely agreeable social media content-based rules.

9:50 ***COVID-19 vaccination decision-making approach and the sentiments of Indian Citizens***

Shubham Chandel (Symbiosis International Deemed University, India); Saikat Gochhait (Lavale & Symbiosis International: Deemed University, India)

A new virus was unearthed in the year 2019, and the entire world was struck by a pandemic. Several different companies and institutions collaborated to produce the vaccine. The definitive answer to the coronavirus pandemic has been outlined as the implementation of a COVID-19 vaccine capable of restricting the virus's spread. The Indian government recently scheduled and launched a large-scale vaccination campaign to combat the covid 19 vaccine. [1] However, there has been some scepticism among citizens, which is due to various reasons. COVID-19 was declared as a pandemic which was a global health crisis. We are now in the year 2021, but normalcy has yet to return, and many parts of the country remain in lockdown. The only way to stop the virus's spread was to develop a COVID-19 vaccine, which was recognized as the definitive response to the COVID-19 pandemic. [2]Numerous organizations concentrated on the vaccine's development. The most effective way to prevent any pandemic is to vaccinate the common population, including the current Coronavirus crisis [3]. There are several factors that cause cynicism in the minds of the common human being when it comes to COVID-19 vaccines. We'll look at different perspectives and sentiments about the Covid 19 vaccine amongst Indian citizens. We used social media posts as a source of information for this. We used sentimental analysis in Study 1 to see how Indian citizens' attitudes and sentiments about the COVID-19 vaccine changed throughout the COVID-19 crisis. we have performed a literature review to comprehend the critical problems that have created concern in the general public regarding the COVID 19 vaccine. [4] "Vaccination and COVID-19" were the key search terms. We looked for studies that were published during the COVID 19 pandemic and that reported on the phenomenon of vaccination.

PS2-2: PS2-2

Chair: Kariya Ngamsomsuke (Mae Fah Luang University & School of Management, Thailand)

8:30 ***A Transfer Learning-Based Deep CNN Approach for Classification and Diagnosis of Acute Lymphocytic Leukemia Cells***

Leo Dominick C Magpantay (Batangas State University, Philippines)

Leukemia is a serious cancer disease that affects children and adults, and it is classified as acute or chronic. Acute Lymphocytic/ Lymphoblastic Leukemia (ALL) is the most prevalent type of blood cancer and one of the leading causes of death. This type of cancer invades the blood and spread through neighboring organs and body systems. To classify cancer cells and non-cancer cells, specialists need to perform manual diagnosis through inspection of cell images under microscope and provide labels through annotation. However, this manual microscopic analysis is a tedious and may lead to false diagnosis. With this concern, the author proposed a computer-aided diagnosis method using a transfer learning-based deep learning approach. This study, YOLOv3 model is utilized to train a deep learning model that will classify ALL and normal cell. The model produced promising results as it has a training loss of 2.8% or a 97.2% training accuracy and a validation loss and accuracy of 2.18% and 97.82%, respectively. Based on model evaluation, the model has a mAP value of 99.8% as well. YOLOv3 was shown to be a useful tool for distinguishing leukemia cells from non-leukemia cells

8:50 ***Deep Transfer Network of Knee Osteoarthritis Progression Rate Classification in MR Imaging for Medical Imaging Support System***

Patrick Jheyd A Antonio (Batangas State University, Philippines)

Technology is invading every element of engineering. Collaboration of various engineering and technology techniques and disciplines can result in successful systems that can be used in everyday life and make living easier and simpler. Bio-Medical services have greatly improved as time and technology have progressed. For example, the Portable Diabetes Checking Machine has made life easier for many diabetes patients by allowing them to check their glucose levels without having to see a doctor. The existence of arthritis in the knee, which is produced by cartilage wear and tear, leading bones to rub against each other, producing pain and other problems, may be detected by an expert osteoarthritis system. The YOLOv3 model, a cutting-edge deep transfer learning machine vision approach, is used to develop a knee osteoarthritis diagnosis model. According to the findings of the study, the detection model has a mAP value of 96.58 % and a training accuracy of 98.73 % and a validation accuracy of 99.32 %, respectively

9:10 ***Identification of Parasitized Single Cell from Normal Using Deep Learning Approach***

Von Cedrick M. Calderon (Batangas State University, Philippines)

Patients' cells need to be examined, thus healthcare facilities require changes as well as advancements in terms of instruments and technology, notably software that aids in the diagnosis of certain symptoms and diseases by looking at them. This aids in the identification and diagnosis of intracellular parasites in a person's cell, making it easier to identify a person's health condition. These parasites are responsible for a variety of acute and chronic illnesses. The paper aim to provide enhanced model for cell classification. This will help to increase the accuracy of detection for intercellular parasites within the patient cell and easily diagnose a person health condition. In response to that, the system implements a deep learning technique in cell categorization using the YOLOv3 algorithm. Having a model with 90.6% mean Average precision, it made a cell classification with 99.06% precision determining whether the subjected single cell is parasitized or normal.

9:30 ***A COVID-19 Safety Monitoring System: Personal Protective Equipment (PPE) Detection using Deep Learning***

Mark Lester R. Collo (Batangas State University, Philippines)

With the recent breakout and rapid transmission of COVID-19, medical personal protective equipment (PPE) detection has gained prominence in the computer vision and deep learning domains. The need for people to wear face masks in public is growing. COVID-19 transmission can be considerably reduced with the use of face masks and PPE, according to research. The goal of this research is to construct a medical PPE detection system using deep learning. The goal of this study is to utilize the YOLOv3 object detection method to conduct object detection, detecting whether a health worker is wearing complete medical PPE or not, upon entering wards or environments prone to the virus. At the moment, there is no publicly accessible PPE dataset for object detection. Hence, the researcher aims to create a medical PPE dataset for future use and development. In the study's findings, the detection model got a mean average precision score of 96.59%, detected complete and incomplete PPE varied with accuracies ranging from 40% to 80% which is to be expected given that there is a lot of variations of medical PPE with different colors and types.

9:50 ***Detection of Covid-19 in CXR: A Low Sample Size Deep Convolutional Neural Network Training Data Approach***

Jehoshua P. Mulgada (Batangas State University, Philippines)

Infectious illness Covid-19 is highly contagious and has claimed the lives of numerous individuals. To assist prevent the virus's transmission, it's critical to identify and isolate those who have been infected with the infection. The purpose of the study is to aid in the detection of Covid-19 alongside with RT-PCR test by utilizing deep learning algorithm, specifically YOLOv3 as the technique to be use for it uses CNN, which then implements deep learning technique. The study has a promising detection to detect if the person's CXR has Covid-19, normal or viral pneumonia, obtaining a mAP value of 95.27% from model 17, which is the highest among the 12 models created.

PS2-5: PS2-5

Chair: Anvar Variskhanov (Mae Fah Luang, Thailand)

8:30 ***Segmentation and Contour Detection for handwritten mathematical expressions using OpenCV***

Sakshi Sakshi (Chitkara University Punjab, India); Vinay Kukreja (Chitkara University, Punjab, India)

Contour Detection owes its own significance in performing semantic segmentation and object classification. It is possible to recognise the edges of objects and readily locate them inside an image by employing contour detection. It is frequently the first step or achievable milestone in a varied range of interesting applications, such as extraction of foreground object from image, classical-image segmentation methodology, identification or detection of object and many more. In this study, we have endeavoured to perform contour detection using OpenCV Adaptive Threshold method on Aida handwriting math recognition dataset which contains 10 batches of 10K images. Our experimentation successfully segmented the inputted mathematical expressions with accuracy of 94.3% on the acquired dataset.

8:50 ***Automatic Classification of Questions based on Bloom's Taxonomy using Artificial Neural Network***

Mohamed Ifham (Sabaragamuwa University, Sri Lanka); Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Ashansa Wijeratne (Sabaragamuwa University of Sri Lanka, Sri Lanka)

Examination questions evaluation is critical in educational institutions because testing is one of the most prevalent techniques of evaluating students' success in a particular course. As a result, it is crucial to create a good and high-quality examination paper that caters to various cognitive levels. As a result, many instructors rely on Bloom's taxonomy proficiency level, a widely used framework for evaluating students' cognitive abilities and capabilities. According to Bloom's taxonomy, many efforts have been offered to tackle question classification automatically. The majority of existing works considered only one domain, such as computer science. This research aims to develop a classification model for classifying examination questions that fall into several domains using Bloom's taxonomy. This paper presents a method for automatically identifying questions using an Artificial Neural Network (ANN). Term Frequency - Inverse Document Frequency (TF-IDF) is used to derive the features from questions papers. We compared the ANN-based approach with Support Vector Machine based approach. According to the findings of this study, the proposed method got an accuracy of 85.2%, which is effective in classifying questions out of several domains using Bloom's taxonomy.

9:10 ***An Improved Procedure for Face Mask Detection using Convolution Neural Network***

Sudhanshu Kumar Jha (University of Allahabad, Prayagraj, INDIA & MHRD, Govt. of India, India); Mayank Saxena (University of Allahabad, India)

The present COVID-19 pandemic scenario where entire world is facing a lot of unforeseen medical challenges, can be somehow controlled by following some medical guidelines and procedures when monitored strictly. Wearing a specifically recommended face mask is one of the easiest ways to prevent it. However, due to negligence by the common people for avoiding face masks, need a meticulous system to find such people and appropriate action may be taken against them. Medical guidelines state that primarily COVID-19 and its variants outspread typically through nose discharge or droplets of saliva by the infected person's coughs or sneezes. Droplets of saliva all around us could infect us and others. So, People need to wear masks as it's one of the methods which can effectively depress the growth of its spreading. Identifying masks over the faces could be done using many methodologies in Computer Science. The primary concern is to work upon identifying masks on people's faces and increasing their recognition accuracy with simple methodology and network. Keep the fact in mind, this paper presents a methodology for the identification of masks on people's faces using Convolution Neural Networks (CNN), for this, a training dataset has been used to generate more augmented images. Afterward, it has been pre-processed by applying CNN. The method has been evaluated using a CNN-based algorithm on the test dataset. The simulation result shows satisfactory performance and accuracy through different curves.

9:30 ***Classification Method of Swallow Nest Quality Using Shape Features and Support Vector Machine***

Anindita Septiarini (Universitas Mulawarman, Indonesia); Ferda Maulana (Mulawarman University, Indonesia); Hamdani Hamdani (Universitas Mulawarman, Indonesia); Rizqi Saputra (Mulawarman University, Indonesia); Edy Winarno (Universitas Stikubank Semarang, Indonesia); Tenia Wahyuningrum (Institut Teknologi Telkom Purwokerto, Indonesia)

Swallow Nest is a valuable export commodity, particularly in Indonesia. It is produced when swallow's saliva hardens and is frequently encountered in high-rise buildings. Swallow nests can be utilized to treat various ailments in the medical sector. The price of a swallow nest varies according to its quality, which is commonly classified into three grades: quality 1 (Q1), quality 2 (Q2), and quality 3. (Q3). Q1 is of the highest quality, while Q3 is of the lowest. Each grade has a different physical appearance. Currently, many people lack knowledge regarding the grade of a swallow nest. Therefore, a method is needed to automatically classify the quality of swallow nests based on computer vision. The proposed method consists of several main processes, including image acquisition, ROI detection, pre-processing, segmentation, feature extraction, and classification. The features extraction was applied based on shapes, followed by implementing the Support Vector Machine (SVM) in the classification process. This process was performed with cross-validation using the k-fold values of 5. The performance evaluation was done

using three parameters: precision, recall, and accuracy, by achieving the value of 90.6%, 89.3%, and 89.3%, respectively.

9:50 ***A Hybrid SVC-CNN based Classification Model for Handwritten Mathematical Expressions(Numbers and Operators)***

Sakshi Sakshi (Chitkara University Punjab, India); Vinay Kukreja (Chitkara University, Punjab, India)

Machine learning and Computer Vision are computer science domains that have been working closely for a long time. Given the ubiquity of handwritten text in human transactions, we are endeavoring to acquire the answer to the quest "Can Computer Vision and Machine learning together be deployed effectively for decisive classification of handwritten mathematical numbers and operators?". The easier it is to communicate via handwritten texts and documents, the more challenging the task of digitizing and prediction, especially for the two-dimensional complex math statements and operators. This paper presents a hybrid model that involves machine learning and deep learning-based decision algorithms for classifying and predicting mathematical numbers and operators. The dataset considered for the experimentation has been downloaded from the Kaggle dataset store consisting of more than 12K images. The primary tasks involved include data collection, data preprocessing, and building and deploying the model. Mainly our model focuses on the extraction of contour features and performing classification using the LinearSVC model, and the prediction of numbers has been accomplished using CNN. The proposed classification and prediction model achieves an accuracy of 89.76% for predicting the math operators and 91.48% for predicting the numbers.

PS2-7: PS2-7

Chairs: Akm Muzahidul Islam (Madani Avenue, United City & United International University (UIU), Bangladesh), Donlaporn Suwanthep Suwanthep (Mae Fah Luang University, Thailand)

8:30 ***Amalgamated convolutional long term network (CLTN) model for Lemon Citrus Canker Disease Multi-classification***

Rishabh Sharma (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Lemon disease detection has been a hot topic of research for decades, thanks to the rising demand and supply for the commodity, which has increased the number of diseases found in the crop. Lemon citrus canker (LCC) is one of those diseases that has a draconian effect on lemon production, and to eliminate that factor, deep learning (DL) based convolutional long term network (CLTN) amalgamated model of convolutional neural networks (CNN) and long short term memory (LSTM) has been developed to build a system for detecting and classifying a 3000 image dataset of LCC disease based on four different disease levels. The implementation of the hybrid model resulted in a binary classification accuracy of 94.2%, while the best accuracy of 98.43% in the case of early level of LCC disease severity multi-classification. The proposed model is an effective model for image classification in terms of accuracy outcomes.

8:50 ***Coverage and Latency Analysis for NB-IoT in Uplink Transmission***

Rasveen Singh (G. D Goenka University Gurugram, India); Shilpy Agrawal (IILM College of Engineering and Technology, Greater Noida, India); Khyati Chopra (Jamia Hamdard University, India); Sandeep Kumar (KL University, India)

Internet of Things (IoT) is the 5th generation evolution, which significantly change the requirements for connectivity mainly regarding lower energy consumption, wide-area coverage, low device, and development cost, and support an enormous number of devices. For this, a novel technology named Narrowband internet of things (NB-IoT) is introduced by Third Generation Partnership Project (3GPP) in its release 13. The foremost requirement is to provide coverage extension specially to the devices placed inside deep doors and in remote areas, even in the worst channel condition. To achieve this in NB-IoT systems, repeating transmission data has been considered a promising coverage enhancement approach. In this paper, a uplink repetition dominated model is proposed for coverage extension with reduced latency rate. The conducted evaluation recovers the transmitted signal even in the poor radio condition, thereby providing coverage enhancement.

9:10 ***IoT Driven Solution for Indoor Air Quality Monitoring System to Develop a Smart Healthcare***

Environment: A Review Based Study

Nadia Shahrin Chandni and Mohammad Ismail (United International University (UIU), Bangladesh); Akm Muzahidul Islam (Madani Avenue, United City & United International University (UIU), Bangladesh)

Air pollution is always responsible for our health deterioration in many ways. In most cases, this health deterioration may cause severe illness to death. It is possible to reduce the effect of Air pollution only if we get the real-time solution. As we spend most of our time in the building or in an indoor space it would be smart to monitor the surrounding air and get a notification through message or alert using IoT-based devices while there will be the presence of air pollutants. This paper is based on the review of different journal and survey papers. It reviews the different systems which can provide an IoT solution for Indoor Air Quality Monitoring to develop a smart health care environment.

9:30 ***An empirical study of Facial Expression Recognition methods***

Marium Malik (The Superior College, Lahore, Pakistan); Maira Kamran (The Superior University, Pakistan); Muhammad Raza Naqvi (INP-ENIT, University of Toulouse, France)

Facial expressions play a crucial role in the non-verbal communication of human beings. It is effortless for them to recognize these sentiments naturally, without a delay but performing the same task through machines is quite challenging. Facial Expression Recognition (FER), a technique used to perform the latter, is a field that is being well researched due to its great impact on decision-making in medical, security, and corporate systems. In this paper, a high-level overview of the FER techniques, databases, results, and analysis is conducted in four-folds. First, we present the importance of its application in the industries. Second, the performance of the latest frameworks is analyzed. Third, the challenges faced in adaptability are described. Fourth, the gaps in the literature are addressed. This study provides a better understanding and updated information for future researchers who wish to explore this domain.

9:50 ***Usability Evaluation of Adaptive Features in Smart Phones: A statistical Analysis***

Hafiz Abdul Basit Muhammad (Superior University, Pakistan); Muhammad Waseem Iqbal (The Superior College, Lahore, Pakistan); Khalid Hamid (Superior University\, Pakistan); Muhammad Raza Naqvi (INP-ENIT, University of Toulouse, France); Muhammad Aqeel (Superior University, France); Farukh Muneem (Superior University, Pakistan)

Smartphone is a device performing the tasks of a computer system and cellular system combined having a touchscreen and user-friendly interface, I read different papers and discuss in detail internet access and an operating system typically for several downloaded apps to run at a high speed and efficiently, the paper that I will write in future has usability evaluation of different features of smartphones, This paper presents the usability in terms of versatility, efficiency and flexibility of smartphone features and its Analyses altogether. The smartphone usability features that are discussed in this paper include Screen rotation, the easy screen turn on/off, raise to awake, smart pause, Eye contact, smart alert, voice commands, face recognition, QR code Reader, Touch disable mode, Battery Saving mode, Night Mode and several Apps operating at real-time. The effectiveness of these features is measured through the After Scenario Questionnaire (ASQ) method. The experiment is carried out with the participation of 110 users of smartphones both Android (Google) and iPhone (Apple) users IoT.

Thursday, March 24 8:30 - 9:50 (Asia/Bangkok)

PS2-4: PS2-4

Chairs: Sudsiri Rungruang (Mae Fah Luang University, Thailand), Kusuma Tungpruan (Mae Fah Luang University, Thailand)

8:30 ***Neo-Twin Support Vector Machines for Pattern Classification***

Sambhav Jain (South Asian University, Delhi India); Shuvo Roy (South Asian University, Delhi India,

Bangladesh); Reshma Khemchandani (South Asian University, India)

In this paper, a new variant of Twin Support Vector Machines (TSVM) termed as Neo-Twin Support Vector Machines (Neo-TSVM) has been proposed for binary pattern classification. TSVM uses hinge loss to allow optimal separation from the opposite class, casting it as a constrained optimisation problem. Neo-TSVM presents a simpler model which eliminates the constraints and cast it as an Unconstrained Minimisation Problem (UMP). Further to allow, better separation between the non-parallel hyperplanes, the notion of angle has also been introduced in the optimisation problem. For testing the efficacy of the proposed classifier, experiments have been conducted on benchmark datasets, and it is observed that the proposed classifier achieves results comparable to that of TSVM, and is also time efficient.

8:50 ***Utilising Sampling Methods to Improve the Prediction on Customers' Buying Intention***

Chau-Tean Yap and Kok Chin Khor (Universiti Tunku Abdul Rahman, Malaysia)

One of the e-commerce challenges is online shopping systems' capability to predict the intention of customer purchasing, especially when building prediction models with unbalanced data sets. Data pre-processing methods, i.e., samplings, are commonly used to tackle the challenge for better prediction. We used a real-time online shopper purchasing intention data set from a published study in this project. The data set is unbalanced as it consists of only 15.5% of the Buy class and the remainder for the No-Buy class. In our experiments, six machine learning algorithms were applied and compared. They were K-Nearest Neighbour (KNN), Naïve Bayes (NB), C4.5, Support Vector Machine (SVM), Sequential Minimal Optimization (SMO) and Multilayer Perceptron (MLP). Generally, these classification algorithms cannot predict the customer intention well, especially for the minority Buy class. We used sampling methods to improve the classification results. The methods used were over-sampling, under-sampling and hybrid sampling, which modified the data set class distribution to achieve better results. Our results showed that the hybrid sampling method gave a comparable classification result and required less computational cost than the previously published study.

9:10 ***Consumer Decisions Under the Influence of social media & Behavioral Targeting***

Abhilash Gogulamudi (Symbiosis International University, India); Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

Previously, television and print ads were significant players in product promotion. However, in today's digital age, those old strategies are just one of several ways to promote any product. As technology has become an integral part of billions of people in everyday lives, the way consumers behave and make purchasing decisions is increasingly influenced and altered by social media and emerging marketing trends. This research aims to learn more about the Influence of consumer decisions by Behavioral Targeting and social media. In addition to discovering more about the impact of social media/the internet on consumer decision-making.

9:30 ***Disrupting the traditional marketing process and decision making using augmented and virtual reality***

Rajsee Sharma and Tripti Dhote (Symbiosis International (Deemed University), India)

In recent years, the world has experienced cut-throat competition in every industry, including marketing. Companies are employing advanced marketing innovations in order to become more accessible to current and future consumers and distinguish themselves from their rivals. The field of marketing has been catalysed by digital disruption. Experts believe that Extended Reality (XRs) which includes technologies like augmented reality (AR), virtual reality (VR) and mixed reality (MR) are promising technical resources for selling goods by offering virtual user interactions that mimic those encountered in physical usage. We will use qualitative methods in this research paper to examine how augmented reality and virtual reality are challenging the conventional marketing funnel, as well as observe the transformation of marketing strategies through the analysis of recent use cases.This research paper aims at assisting marketing managers in comprehending the recent change in conventional marketing strategies and how incorporating expanded realities into their campaigns will benefit them in achieving successful optimum marketing, improved product exposure, and increased revenue.

9:50 ***Modeling the Adoption of Hybrid Rice Seeds Brands among Farmers***

Deepika Jhamb (Chitkara University, Punjab, India); Vinayak Sharma and Amit Mittal (Chitkara Business School, Chitkara University, Punjab, India)

The Indian economy has a big dependency on agriculture, so agriculture has not only employment but also enabling support to a large population of the country. Rice is among the most important food crops of India thus it is very critical to the food security of the nation. Though hybrid rice was introduced in 1996 commercially to farmers of India, major acceptance of hybrid rice came in the last decade when the number of hybrid rice seeds was accepted by farmers for sowings. The state focused for the study is Jharkhand, where rice is a rainfed crop but this state has got good acceptance for hybrid rice seeds. In this study, we tried to understand the priorities of consideration of these factors while adopting a new hybrid rice seed brand by a farmer. The targeted geography of the study was the Ranchi district. We listed all possible factors impacting the adoption. The direct touchpoints individuals i.e., Dealer's point, Company representative and Government officials. The promotional advertisement, promotional campaigns, influencers or own user experience, and also credit, pricing were the other part of this list. After a detailed evaluation of each factor, we were able to bifurcate the factors into three representative categories "Advice", "Practical", and "Finance". In the study's results, it was found that "Advice" has emerged as a major factor while "Practical" was coming second big factor and "Finance" was the third important factor to influence adoption. Exploratory Factor Analysis followed by Confirmatory Factor Analysis was applied.

Thursday, March 24 8:30 - 10:10 (Asia/Bangkok)

PS2-3: PS2-3

Chairs: Vimal Kamleshkumar Bhatt (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, Pune, India), Kiki Khoifin (Mae Fah Luang University, Thailand)

8:30 ***Determinants of Vietnamese Farmers' Intention to Adopt Ecommerce Platforms for Fresh Produce Retail: An Integrated TOE-TAM Framework***

Hieu Duc Phan, Linh Hoang Vu, Chau Minh Ngoc Nguyen, Thang Duc Nguyen and Anh Quynh Trinh (National Economics University, Vietnam)

The application of e-commerce platforms for retailing agricultural products has been increasingly adopted for several benefits namely market expansion and connection, brand establishment, price improvement as well as the motivation for farmers to actively ameliorate their farming practices, product quality and package. However, this retail method is still lagging far behind in Vietnam - despite the need for digitalization to solve persistent problems, namely the imbalanced supply, demand and accompanied price loss in the traditional distribution channel. Thus, this research aims to investigate the factors that impact the Vietnamese farmers' intention to adopt e-commerce platforms for fresh produce retail. The paper applies the integrated Technology Acceptance Model and Technology-Organization-Environment framework. Through an online survey, a sample of 344 farmers who produced fruits and vegetables across Vietnam was drawn to confirm the hypotheses of this study. The results showed that three factors, namely "Perceived usefulness" (PU), "Perceived Ease of use" (PEOU) and the environmental context, directly and positively affect "Intention to Adopt" (INT). Besides, both the technological context and the organizational context is positively associated with PU and PEOU. Findings are valuable to the development in e-commerce platforms and policies to promote Vietnamese farmers' intention of using e-commerce platforms to retail agricultural products.

8:50 ***Attitudes of Society towards Breaking Beauty Standards Advertising***

Kanyarin Klinkosumsivadol, Thidarat Phubaengmai, Paveethida Taikul and Sunida Tiwong (Mae Fah Luang University, Thailand)

The purpose of this paper is to study the opinion of society towards breaking beauty standards. Recently, society has become aware about the diversity of the physical. Adidas promotes their product by using the theme of breaking beauty standards which shakes the world of advertising by using a model who does not follow the standard in their new advertisement. The literature review involves with breaking beauty standard, beauty standard, advertising, advertising effect, and self-confidence. The data obtained from the online questionnaire by collecting data from 408 respondents by using exploratory factor analysis (EFA). The questionnaire consisting of general information, Adidas brand, attitude of beauty standards, self-confidence, advertising, and giving an opinion. Most people agree that the beauty standard depends on individual attitudes and it lead to social issues such as discrimination, social bullying, etc. In addition, people are affected by beauty standard which lead to less of self-confidence.

Recently, people are more aware in diversity of beauty to persuade them to self-esteem in society. Moreover, bran ambassador and model in advertising impact people through beauty standard image. Adidas launched breaking beauty standards advertising, it made the brand more engaging because Adidas demonstrate the diversity of beauty. Nowadays, people in society have begun to be aware of various beauty and advertisements are part of making the breaking beauty standard movement more accepted in society.

9:10 ***Comparative Analysis of Top Payment Apps in India - By Studying Customer Satisfaction***

Pragya Tiwari (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vinayak Bhavsar (Balaji Institute of Modern Management, Sri Balaji University, India); Binod Sinha (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vimal Kamleshkumar Bhatt (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, Pune, India)

With the tremendous increase in the use of digital payment systems there is a surge in the usage of payment apps, therefore it is very important to do a comparative analysis of various payment apps in order to understand the customer satisfaction towards various payment apps and to identify the factors which motivates people to use a particular payment app. The Research is conducted Pan India using an online questionnaire of 200 respondents. Primary as well as secondary data was used in the study. Hypothesis testing was done using SPSS software and results were obtained based on all the factors which could possibly affect the selection of the payment app.

9:30 ***Impact of Stock Trading Apps on Indian Millennial Consumer behavior in the stock market***

Chinmay Sumant (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vinayak Bhavsar (Balaji Institute of Modern Management, Sri Balaji University, India); Binod Sinha (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vimal Kamleshkumar Bhatt (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, Pune, India)

The present study is conducted on the 'stock trading' business and how consumers decide to buy and sell in the digital era. Currently, there are many apps available on smartphones such as 'kite' by Zerodha, Angel Broking Stock Trading App, 'MO investor' by Motilal Oswal, 'IIFL Markets' by IIFL securities, and many others which have more than 10 lakhs of downloads on the Google Playstore. Lakhs of Indians, mostly millennials between the ages of 20 and 35, trade daily through these. Before, the rise of these apps in the mid-2010s, people used to rely on their stockbrokers to put 'an' order to sell or buy any share of a company. Information sources were just television and newspaper - and most people used to act on the advice of stockbrokers or their trusted acquaintances. Now, the scenario is completely different - stock trading individuals are continuously updated through their 'Trading apps' (such as Kite and others mentioned above) or are advised by gurus through social media apps like Instagram or LinkedIn or YouTube, etc. There are even Stocking Trading Advisory apps such as 'Upstox', 'Smallcase' etc., which advise consumers on purchase, sell, and hold decisions. This paper will focus on the impact of stock trading apps on the Indian Millennial (20 to 35 years) consumer behavior in the stock market.

This study will also focus on identifying the 'main parameters of value' considered by the customers when deciding to engage in online trading through stock trading apps. This study will further undertake a competitive analysis of the discovered 'main parameters of value' in the most used apps, limiting to Zerodha, Angel Broking, Motilal Oswal, and IIFL securities, etc., which are having higher than 10 lakhs downloads in google playstore. This study will conclude by identifying which app amongst these is most ahead in its journey to becoming an ideal product at this time.

9:50 ***Implementation of digital marketing strategy in the Gaming industry***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Dixant Singh (Symbiosis International(Deemed University) & Symbiosis Institute of Digital and Telecom Management (SIDTM), India)

Digital Marketing is a power tool that can either break or make anything it touches. Due to the current pandemic scenario, we all have learned that Digitalisation is the new normal and adopting this new normal, digital marketing is "The Only Tool" for any

marketer. Digital Marketing has not only changed the way how people viewed the gaming industry but has also opened new horizons for various kinds of career opportunities. Gaming industry is one of the most misunderstood and ignored industry of our modern world. Many people believe that gaming is just for lazy people who don't have anything better to do. But what most of them don't see is that Gaming industry is the biggest entertainment industry and even all other entertainment industry combined, can't match the annual revenue of gaming industry. I grew up playing video games and has seen this industry grow and change with time. My interest in gaming and newly developed passion for marketing, urged me to dive deeper into the world of digital marketing and how with evolution in technology and digital marketing strategies has impacted the gaming industry and brought it into the eyes of billions of people all around the globe.

PS2-8: PS2-8

Chair: Proychai Klakayan (Mae Fah Luang University, Thailand)

8:30 ***Ensure Safe Internet for Children and Teenagers Using Deep Learning***

Farzana Arefin Nazira (Bangladesh University of Business & Technology, Bangladesh); Sudipto Ghosh (BUBT, Bangladesh); Kamruddin Nur (Universitat Pompeu Fabra, Spain); Sondip Poul Singh and M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

Modern technology provides us with incredible resources that change how we live our lives daily. In today's world, every single person uses a mobile phone. The child and teenagers also use mobile phones with the internet to communicate with their parents when they are in the office. Children and teenagers also use mobile phones for study, gaming, and social media. Sometimes the inappropriate content will appear before children and teenagers. Sometimes they cannot understand and click on it. We developed a proposed architecture based on CNN, RNN, OpenCV, haar cascade classifier, and MySQL for internet safety children and teenagers. When children and teenagers click on inappropriate content, the video camera will open and detect a child, teenager, adult, or old. If it is a child or teenager, the content will be hidden. OpenCV has been used for opening the video camera. Haar cascade classifier used for face detection. XAMPP MySQL database has been used for matching website links and blocking them. We generate a child, teenager, adult, and old(CTAO) dataset that contains 5000 images. The proposed architecture has been assessed using the CTAO dataset. We obtained 88.50% accuracy, 86.12% precision, 87.10% recall, and 86.60% f1 score.

8:50 ***Improving Stochastic and Dynamic Communication Networks by Optimizing Throughput***

Md Mashum Billal (University of Alberta, Canada); Mohammad Arani (University of Arkansas at Little Rock, USA); Mohsen Momenitabar (North Dakota State University, USA); Hamzeh Davarikia (McNeese State University, USA)

The research problem is to measure performance of a communication network by constructing models for the expected value. We tried to propose a comprehensive stochastic-network model whose nodes and arcs are subject to failure, we can monitor existing network performance and also forecast the performance of new or improved networks. For the purpose of this paper dynamic network flow models with a stochastic network representation of a communication network is used. The approach is to use these performance measure models to produce bounds for the expected values of the vector time-series performance data that can be possibly output of network monitoring.

9:10 ***Experimental Analysis of Classification for Different Internet of Things (IoT) Network Attacks Using Machine Learning And Deep learning***

Anika Tasnim, Nigah Hossain, Nazia Parvin, Sabrina Tabassum, Rafeed Rahman and Muhammad Iqbal Hossain (Brac University, Bangladesh)

The internet of things (IoT) is one of today's most adaptable technologies. The internet of things (IoT) is adaptive and versatile due to its pervasiveness, rising network connection capacity, and diversity of linked objects. The most common problem impeding IoT growth is insufficient security measures. The threat of data breaches is always there since smart gadgets gather and transmit sensitive information that, if disclosed, might have severe consequences. In this article, to identify and classify IoT network

attacks, we have analyzed six machine learning and deep learning approaches: Decision Tree, Random Forest, AdaBoost, XGBoost, ANN and MLP. Accuracy, Precision, Recall, F1-Score, Confusion Matrix are some of the metrics we have used to evaluate our models. We have achieved fairly impressive results (above 96%) in binary classification for all the techniques. When all of the classifiers were analyzed, Decision Tree and Random Forest outperformed all others (above 99%) for both binary and multiclass classification. Adaboost and ANN, on the other hand, perform badly for multiclass classification. We have also applied Undersampling, Oversampling and SMOTE techniques on a dataset to reduce data skewness and to evaluate multiple ML and DL algorithms. The feasibility of the techniques suggested in this work is demonstrated on the IoT/IIoT dataset of ToN IoT datasets, which incorporate data obtained from Telemetry datasets of IoT and IIoT sensors.

9:30 ***Deep Neural Network for Recognition of Enlarged Mathematical Corpus***

Sakshi Sakshi (Chitkara University Punjab, India); Sachin Lodhi (UIT(BU) Bhopal, India); Vinay Kukreja (Chitkara University, Punjab, India)

Recent works influenced by the robust and outstanding performance of deep learning-based recognition models show the less attended research on an enlarged corpus of handwritten mathematical text. This article focuses on proposing a deep neural network-based model that has been processed and trained for a real-time dataset of mathematical expressions collected from school and university students of Punjab and Madhya Pradesh states of India. Mathematical expressions are part of education and knowledge-based science learning. Thus, predicting them on their handwritten source using a neural network is the novel approach of the article. A total of 236057 images have been obtained after segmentation, and the sample data has been collected from 1000 users. The proposed deep neural model exclusive of three dense layers (TrioNet) gives us an accuracy of 99.1% while working with 20 epochs.

PS2-9: PS2-9

Chair: Supannika Khuanmuang (Mae Fah Luang University & School of Management, Thailand)

8:30 ***A Bibliometric Analysis of Blockchain and its Applications in IOT and ML for Improved Decision Making***

Manisha Bunga (Symbiosis Institute of Digital and Telecom Management, India); Sujata Joshi (Professor, SIDTM, India)

The fundamental goal of this research is to examine the evolution of Blockchain technology, particularly in the areas of IoT and machine learning. Decision-making has become more complex in the modern era as there are more options to pick from. This research explains how blockchain is used in the decision-making process. Blockchain stores the data where it is highly impossible to hack or edit this data. The research methodology used is Bibliometric Analysis. Bibliometric analysis is the analysis of books, articles, and other publications using statistical methods. There were a total of 18,978 publications available in Scopus from 2012 to 2021 on Blockchain. There were a total of 18,994 publications on Blockchain overall. Country-wise, year-wise, topic-wise, journal-wise, institution-wise and research field-wise analysis is done in this study. By the obtained data, the performance of Blockchain will be analyzed and the future of Blockchain can be predicted. According to the study, Blockchain has a wide range of applications in IoT and ML, all of which improve decision-making. This analysis provides valuable insights and adds benefit for researchers to understand the overall development of Blockchain.

8:50 ***Influence of Consumer Decisions by Recommender system in fashion e-commerce website***

Sruthi K and Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

Purpose - The Study aims at providing deeper insights on influence of recommender systems and various personalized suggestions in Fashion e-commerce websites. It gives information regarding how recommender systems impact the purchasing decision of a consumer to formulate better systems with data.

9:10 ***Comprehensive Survey of different Machine Learning Algorithms used for Software Defect Prediction***

Sharadhi A k (India); Vybhavi Gururaj (Bachelor Degree, India); Sahana Shankar (Ramaiah University of Applied Science, India); Deepak Varadam (Assistant Professor & M S Ramaiah University of Applied Sciences, India); Keerti Umadi and Mushkan Kumar (Bachelor Degree, India)

The software development life cycle is a long and complicated process. It consists of analysis, design, development, testing and deployment. Defect prediction is the technique of creating models that detect defective systems such as units or classes in the early stages of the process. The major goal of Software Defect Prediction is to detect defects prone in the program and thereby reduce the effort, time and cost involved to the minimum. This paper gives a comprehensive review of all the techniques to approach defect prediction. The PROMISE repository which is a public software defect prediction dataset which is owned by the National Aeronautics and Space Administration (NASA) is used. More than 30 research papers in the domain of software defect prediction were analysed and reviewed. In each paper surveyed, the processes involved in Software Defect prediction were captured. About 30 papers with different Machine Learning Algorithms were identified and entered into the table. The results were tabulated into columns like Dataset Used, Supervised Learning Algorithm, Un-supervised Learning Algorithm and Computational Intelligence. The bar graphs were generated to determine the most used Supervised Learning Algorithm, Un-supervised Learning Algorithm and Dataset used for Software Defect Prediction among all the 40 papers surveyed thoroughly.

9:30 ***Deep Learning Based Optimal Joining Order Enumeration with Adaptive Cardinality Estimation***

Sabbir Ahmed Sibli, Nuray Jannat and Asma Ul Hussna (BRAC University, Bangladesh); Iffat Trisha (BRAC University, Dhaka, Bangladesh); A. M. Esfar-E-Alam (BRAC University, Bangladesh)

Query optimization is one of the trendiest fields of research in database study since the performance of query execution is largely determined by how the query is optimized. Query Optimization's purpose is to find the optimal physical plan for a given cost model. Among all query optimization problems, join query optimization is the most complex one. In reality, it belongs to the NP-hard complexity issues. Moreover, the performance of identifying joining relations is heavily reliant on cardinality estimation. If the cardinality estimation fails to provide the actual cost of any joining order, no matter how efficient the method is, it will fail. As a result, both the approach for determining the best joining order and the method for estimating cardinality are equally significant. This study combines these two concepts: the first is ReJOIN, a deep reinforcement-based joining order enumeration technique, and the second is machine learning-based adaptive cardinality estimation in each run of the DRL. In this paper, it is demonstrated how much of an impact is dosed when PostgreSQL is used in conjunction with the proposed technique. In addition, the full suggested model has been performed and evaluated using an open-source dataset of the Internet Movie Database (IMDB). A comparison has been done between REJOIN, joining order enumeration with traditional cardinality estimator, and with ML-based cardinality estimator. Between these two ways of query optimization, the second one performs better and execution time has been improved from 2% to 27% approximately.

9:50 ***Blockchain and IoT in developing Fintech Ecosystem- An Assistance to Insurance Industry***

Rajarshi Chauhan (Symbiosis Institute of Digital and Telecom Management, India); Abhijit V. Chirputkar (Symbiosis International Deemed University, India); Pankaj Pathak (Symbiosis International University & Symbiosis Institute of Digital and Telecom Management, India)

With the advent of newer risks, challenges, and ever-changing consumer behavior Blockchain and IoT can help shape the future of the Insurance Industry. The Covid Pandemic has coerced the insurers to determine how best to meet the demands of their customers, provide service with minimal effort, and achieve their cost efficiency objective. The cost-efficiency objective of the insurance industry should also be aimed at freeing up funds to invest in new technologies and not lose sight of the transformation imperative. Blockchain and IoT can provide the industry with an opportunity to transform its core functions and processes. This study aims to highlight the role of IoT and blockchain in assisting for decision making in the Insurance industry, as well as research trends. In addition, the study attempts to identify potential opportunities in the insurance business. The goal of this review article is to analyze both the literature sources to comprehend the actual levels of implementation and use cases, as well as to determine the direction in which the insurance industry is now heading in terms of technological adoption.

Thursday, March 24 10:10 - 10:20 (Asia/Bangkok)

Break: Coffee Break

Thursday, March 24 10:20 - 12:00 (Asia/Bangkok)

PS3-1: PS3-1

Chair: Nuttachat Wisittipanit (Mae Fah Luang University, Thailand)

10:20 ***Acute Decisive Fuzzy Haptic Surface Response System for Tactile Sensitivity***

Shriram K. (VIT-AP University, India); M. Kalyan Chakravarthi (VITAP, India); Y. V. Pavan Kumar (Vellore Institute of Technology - Andhra Pradesh (VIT-AP) University, India); Bharath Kumar V. (VIT-AP University, India); D. John Pradeep and Ch Pradeep Reddy (Vellore Institute of Technology - Andhra Pradesh (VIT-AP) University, India)

Virtual Reality (VR) environment has been gaining significance and it is now possible for one to touch the virtual objects and also transform them with hands. But it requires much more than a fast graphic board and an immersive visual display to realize the VR. For tasks like multiple-finger interaction, it requires a force-feedback device which generally is acquired from a wearable 'haptic glove'. The recent progress in the VR market has resulted in the sophistication of efforts in this technology. Already existing haptic gloves provide only generic haptic feedback to the user, thus, the user cannot differentiate the texture of the objects that he/she is interacting within the virtual environment. To overcome this drawback, the proposed system uses machine learning complemented with a fuzzy logic system to provide distinctive haptic feedback based on the object textures such as coarse, smooth, etc., movement of the user's hand and its speed. This system is designed to be used as an add-on with the existing VR Gloves so that user's hand movement tracking data collected by the existing system can be reused by the proposed system. This eliminates the need for additional Inertial measurement sensors, thereby reducing the costs of the overall project. This paper presents a new system that enhances the haptic feedback system by using a differential mechanism based on the texture of the object that can be rendered in VR. This application paves a path for advanced decision-making assistance in haptic surgeries in modern medicine.

10:40 ***Alzheimer's disease detection with Optimal EEG channel selection using Wavelet Transform***

Digambar Puri (Ramrao Adik Institute of Technology, India)

Alzheimer's disease (AD) is a neuro degenerative disorder having higher fatality in the elderly due to delayed treatment caused by a lower detection rate. State-of-the-art multichannel Electroencephalogram (EEG) techniques have been reported to assist clinical practitioners in early AD detection. However, a large number of EEG channels comprises several redundant channels resulting in higher computational complexity. Paper presents a channel ranking using sub-band-based energy to entropy ratio for automatic detection of AD. Wavelet packet analysis is used to calculate the ratio of energy to entropy for each wavelet sub-band of the EEG signal. The signal channels are ranked based on calculated sub-band ratio values such that the most important channel has the highest ratio. The feature vector for a channel comprises the mean, standard deviation, kurtosis, minimum value, maximum value, and energy of each wavelet packet sub-band. The optimal number of channels is selected using proposed rank-based sequential backward feature elimination. Six different classifiers, namely, support vector machine (SVM), multi-layer perceptron neural network, k-nearest neighbors, random forest, Naive Bayes, and AdaBoost are used in a 10-fold cross-validation framework. Evaluation is performed using 16 channel Alzheimer's Patients' Relatives Association of Valladolid dataset. The experimental results showed the highest accuracy of 97.50%, with 97.08% sensitivity and 97.45% specificity for six channels (T4, P3, P4, O1, O2, and Cz) and SVM classifier.

11:00 ***An Intelligent Voice Assistance System for Visually Impaired using Deep Learning***

Renju Varghese (Providence College of Engineering Chengannur, India); Pramod Mathew Jacob (Providence College of Engineering Chengannur & Chengannur, India); Midhun Shaji, Abhijith R, Emil John and Sebin Philip (Providence College of Engineering Chengannur, India)

Unassisted navigation, object recognition, obstacle avoidance, and reading activities are extremely difficult for people who are completely blind. For those who are visually impaired, we present a new form of assistive technology. Raspberry Pi 3 Model B+ was selected to illustrate the proposed prototype's capability because of its inexpensive price, compact size, and ease of integration. Incorporated within the design is a camera, sensors for obstacle avoidance, and powerful image processing algorithms for detecting and classifying objects. Both the camera and the ultrasonic sensors are used to determine the user's distance from the impediment. The image-to-text converter, followed by audio feedback, is integrated into the system. A typical pair of eyeglasses can be used to mount the entire system, which is small, light, and simple to use. Using 60 completely blind people, researchers compare the suggested device to the classic white cane in terms of performance. Controlled environments based on real-world scenarios are used to conduct the evaluations. In comparison to a white cane, the proposed device provides higher accessibility and comfort, as well as simplicity of navigation for visually impaired people

11:20 ***An interactive and secure Blockchain web portal for online healthcare services***

Sonali Kothari (Symbiosis International Deemed University, India); Vijayshri Nitin Khedkar (Symbiosis Institute of Technology, Symbiosis International, Lavale, Pune, India); Aditi Goyal, Aditya Banerjee, Aniket Mulik and Yashika Chhabaria (Symbiosis Institute of Technology, India)

In a world where privacy and authenticity gets questioned at every turn, technologies like Blockchain exist to help assist the digital information's integrity to remain. A volatile and sensitive industry, the healthcare industry, is seen as an avenue for multiple technological ideas and advancements. With privacy being the main concern, work talks about the importance of its resolution, putting users and their needs first through user research, and further implementing a secure and effective Blockchain file storage system using IPFS and Ethereum, accessed via an interactive web application and using a secure backend for user information integrity within system.

11:40 ***FSALE: Fast Decision-Aiding Tool in the Investigation of Salmonella Enterica Genome Assemblies***

Nuttachat Wisittipanit, Ekachai Chukeatirote and Adirek Baisukhan (Mae Fah Luang University, Thailand)

Outbreak events involving foodborne pathogens such as Salmonella enterica happen more frequently nowadays; and when such events occur either in the endemic or pandemic level, they must be dealt with swiftly and effectively to prevent further spread. As such, this research presents a bioinformatics tool based on whole genome sequence (WGS) data called "FSALE" which can rapidly analyze a group of genome assemblies in a short period of time and provide information for healthcare professionals, crucial in the decision making process to deal with an outbreak event in a timely manner. The reported outputs include serotypes, sequence types (STs), core-genome multi-locus sequence typing (cgMLSTs), antimicrobial resistance (AMR) classes and subclasses (for antibiotic treatments) as well as pie chart and phylogenetic tree for the infection source investigation. Given the low-cost, fast processing time and super high resolution of WGS, FSALE could be a viable tool for rapid and deep epidemiological investigation for any medical experts who have to deal with the occurrence of Salmonella enterica outbreaks.

Thursday, March 24 10:20 - 11:40 (Asia/Bangkok)

PS3-2: PS3-2

Chair: Surapong Uttama (Mae Fah Luang University, Thailand)

10:20 ***A Comparative Study of Machine Learning Models for Parkinson's Disease Detection***

Chayut Bunterngchit (Institute of Automation, Chinese Academy of Sciences, China); Yuthachai Bunterngchit (Siam University, Thailand)

Parkinson's disease is a major public health concern, affecting over 6 million people worldwide. The objective of this paper is to assist doctors and clinicians in accurately detecting the disease at an early stage. Previous research proposed various models

that gave very high accuracy. However, very few of them examined the processing time of each model, which is an important consideration in decision making. The most common method for diagnosing this disease is through voice signal recordings. This paper formulates 10 machine learning-based predictive models on a biomedical voice measurement dataset. A genetic algorithm is applied as a feature selection algorithm. The highest prediction accuracy after running 10 generations is 97.96%. The features of the most accurate model are reduced from 22 to 9 features. The processing time of the most accurate model is 1.83 seconds. The best improvement in accuracy after applying this feature selection algorithm is 16.33%.

10:40 ***A review of Generative Adversarial Networks in Cervical Cancer Imaging***

Tamanna Sood, Padmavati K and Rajesh Bhatia (Punjab Engineering College, India)

Cervical cancer is the fourth most common type of cancer found in females. It contributes 6-29% of all cancers in women. It is caused by a virus known as Human Papilloma Virus (HPV). The 5-year survival rate of cervical cancer varies from 17%-92% depending upon the stage at which it is detected. Early detection of this disease helps in better treatment and survival rate of the patient. Many deep learning algorithms are being used for the detection of cervical cancer these days. A special category of deep learning techniques known as Generative Adversarial Networks (GANs) are catching up speed in the screening, detection, and classification of cervical cancer. In this work, we present a comprehensive survey of the various GAN models, their applications, and the evaluation metrics used for their performance evaluation in the field of cervical cancer imaging.

11:00 ***Multi class Alzheimer disease detection using deep learning techniques***

Ch S C A Rama Ganesh, Gunthalagari Sri Nithin, Shekkari Akshay and Venkat Narayana Rao (Sreenidhi Institute of Science and Technology, India)

Alzheimer's disease is a neurodegenerative disorder. Alzheimer's Disease is a predominant kind of memory disorder. Alzheimer's disease is not reversible, progressive brain disease shows a decrease in thinking with no validated disease-modifying treatment, which implies that there is no cure. The disease's side effects are harmless in the beginning, but later they become more extreme over the long run. Thus, a great effort is needed to develop methods for detecting early, especially at stages like very mild, mild, moderate, etc.… to slow or prevent disease progression because, on the off chance that the sickness is anticipated before, the cell degeneration can be slowed down. To this end, the construction of a good prediction system for Alzheimer's disease is the aim of this paper, often reducing time to treatment, medical errors, and overall healthcare cost. This paper utilizes AI calculations to anticipate Alzheimer's illness utilizing Brain MRI Scans. In our study, we trained CNN models in terms of detecting from brain MRI images. The MRI image dataset has been collected from The OASIS dataset. Three different Deep CNN models for our study: VGG - 16, Inception-V3, and Xception to classify Alzheimer's disease. We trained and evaluated all the Deep CNN models and after a relatively short amount of training (125 epochs), we got to achieve a 75% accuracy with the VGG-16 model, 70% accuracy with the Inception-V3 model, and 70% with the Xception model. Thus, we got very high classification accuracy with our research. In this paper Categorizing of Alzheimer's disorder is done into multiple classes (no-dementia, very mild, mild, moderate) to enable the patient to undergo the best and most efficient treatment plan to the patient right away.

11:20 ***Identification of chemical entities from prescribed drugs for ovarian cancer by text mining of medical records***

Sonali Kothari (Symbiosis International Deemed University, India); Vijayshri Nitin Khedkar (Symbiosis Institute of Technology, Symbiosis International, Lavale, Pune, India); Anvita Gupta, Adhiraj Goswami, Muskaan Agrawal and Kajal Jaggi (Symbiosis Institute of Technology, India)

With the emerging technologies and latest trends in the information technology sector, machine learning can be said as one of the most powerful means in developing various software which are helping the business as well as the industries, the government, and private organizations, which shows the change in the emergence of this technology in the healthcare sector. Healthcare can be said as the most important aspect of the 21st century. With the spread of various diseases and also the pandemic which had hit the world recently the healthcare system must come up with efficient drugs which are liable and are for a sure cure to the disease. Proposed research involves use of various machine learning tools and deep learning techniques. The algorithm uses text mining and NLP for extraction of chemical data from the related research papers and a drug dictionary is created. This dictionary contains specified targeted chemical data related drugs used for treating ovarian cancer and will help in suggesting personalized drug to patient.

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PS3-3: PS3-3

Chair: Rajanikanth Aluvalu (Chaitanya Bharathi Institute of Technology, India & Noble International University, USA)

10:20 ***Spurious Cotton Seed Control Management***

Nishant Racherla, Bhavesh Kankani and Adarsh Reddy Pulakanti (India); Venkat Narayana Rao (SNIST, India); Pallepati Vasavi (Annamalai University, India)

There have been several news stories in the last couple of years about police seizing fake cotton seeds. Because no effective steps or activities have been done to address this issue, it has gotten worse. The customers who buy the seeds and the authentic producers who generate the seeds gain equally from the use of the technology. Customers may scan the QR code on the package to ensure that the goods they are purchasing are from a trusted manufacturer. Genuine cotton seed package makers have suffered huge losses as a result of the surge of counterfeit cotton seed packages. Genuine producers will be able to receive their fair portion of the money as a consequence of the suggested system, which would result in the eradication of phony goods. As previously stated, no meaningful steps have been done against this, other than the arrest of those responsible for this heinous act. However, they are just measures implemented after the event. The system proposed is intended to be a preventative measure.

10:40 ***An Improved Mobility State Detection Mechanism for Femtocells in LTE Networks***

Umar Danjuma Maiwada (Universiti Teknologi PETRONAS (UTP), Malaysia & Umaru Musa Yaradua University, Nigeria)

The usage of femtocells, or micro macrocell base stations, increases the quality of service for both indoor and outdoor customers. Femtocells were used in 4GP's (Fourth Generation Project) LTE (Long Term Evolution) and LTE-advanced like the 5G/6G networks to improve indoor coverage and capacity. However, the random deployment of femtocells, as well as the large number and size variables, make controlling mobility even more difficult. This research investigates femtocell mobility state detection algorithms for LTE and LTE-advanced networks (5G/6G networks). Several systems for detecting movement are currently in place. However, when it comes to cell type information and parameter scaling difficulties, they are found wanting. Overall handover performance suffers because of this gap that present techniques fail to address. As a remedy, this study presents an Improved Mobility State Detection Mechanism (IMSDM). As a result of the findings, IMSD appears to be a viable way to improve handover performance deterioration and information about the cell type problems. Although it did not reduce the risk of Radio Link Failure (RLF), it did provide a good trade-off between RLF risk and the frequency of Ping-Pong handovers.

11:00 ***An Integrated Number Plate Recognition System through images using Threshold-based methods and KNN***

V Uma Maheswari (Vardhaman College of Engineering, India); Rajanikanth Aluvalu (Chaitanya Bharathi Institute of Technology(A)); Mudrakola Swapna (Matrusri Engineering College)

In the last few decades, the use of vehicles in our daily life has become mandatory and increased drastically. Sometimes, controlling traffic and identifying vehicle owners manually becomes tedious due to crowd signals, which disobey the traffic rules and drive fast and abnormal. This demands efficient automatic number plate detection as the solution these days. Still, it is challenging in such cases as moving vehicles fast, font, illumination, etc. This led to developing efficient and automatic number plate detection as the solution. This paper presents an automatic number plate detection with number diagnosis and tracking by applying various methods such as thresholding, morphological methods, contour detection, etc. Later, KNN is used for classification to improve accuracy. The proposed method tested on datasets DB1 and DB2 proves better in terms of accuracy, recognition rate, and retrieval rate.

11:20 ***Improved Point 5P Formula for Twisted Edwards Curve in Projective Coordinate Over Prime Field***

Zuren Razali (Faculty of Communication, Visual Art and Computing, Universiti Selangor, Malaysia);

Norliana Muslim (Universiti Selangor, Malaysia); Saliyah Kahar (Institute of Visual Informatics, Universiti Kebangsaan Malaysia, Malaysia); Faridah Yunos (Universiti Putra Malaysia, Malaysia); Kamsiah Mohamed (Universiti Teknologi MARA & Universiti Selangor, Malaysia)

Computer security is essential in today's world of technological advancement. Providing high security for constrained devices with limited capacity, memory, and power consumption has become one of the prominent challenges in computer security. Elliptic curve cryptography (ECC) is a powerful cryptography approach that generates security keys using the mathematics of elliptic curve (EC) to achieve an equivalent level of security with smaller key sizes. The efficiency of ECC depends on an EC operation known as scalar multiplication (SM). SM in Affine coordinate that has an inversion can be accelerated by employing projective coordinates. At the point arithmetic level, this paper improved the precomputed point by proposing a new point 5P formula in projective coordinates using EN for the Twisted Edwards curve over prime field. By comparison to the Twisted Edwards curve with temporary variables method, the algorithm using the proposed 5P formula saved 3M with 16.3% cost reduction. The proposed method also saved 3.2M, 7.2M, and 4.2M with 17.2%, 31.9% and 21.4% cost reduction, when compared to 5P using the Weierstrass curve with point addition, Edwards curve with points addition and doubling, and Edwards curve with computable and point addition methods respectively. The proposed point 5P can be applied to improve the ECC of SM algorithm.

11:40 ***Server Load Balancing with Round Robin Technique in SDN***

Tilokchan Irengbam, Thounaojam Rupachandra Singh and Tejmani Sinam (Manipur University, India)

Round Robin Algorithm plays a crucial role in load balancing of server farms. This paper's primary focus is to benchmark the Round Robin algorithm in Server Load Balancing (SLB) using Software Defined Networking (SDN). Experimental results show that the Round Robin algorithm gives 100% availability of the servers. Load balancing is done among the live servers from the server pool. In our experiment, the Round Robin load-balancing algorithm is implemented using a POX controller and an OpenFlow switch.

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PS3-4: PS3-4

Chair: Shiv Prakash (University of Allahabad, India)

10:20 ***A Gas Cylinder Monitoring System: A Benign Transportation Sector Based on IoT and Edge Computing***

Mahbubul Islam, Saddam Amin, Abul Kalam Azad and Gazi Mainuddin (United International University (UIU), Bangladesh); Akm Muzahidul Islam (Madani Avenue, United City & United International University (UIU), Bangladesh)

Hydrocarbon (HC) based Compressed Natural Gas (CNG) gas is highly flammable and can be threatening if not maintained and monitored correctly. Failure to detect gas leakage leads to property damage and poses a severe threat to human life. In this paper, we focused on the safety measures of CNGbased automobiles in Bangladesh's transportation sector. CNGrun vehicles are causing a high risk of explosion, and if not regulated and monitored regularly, the gas cylinder can explode, causing massive damages. Also, the manual inspection may not always be precise and often produce severe consequences. Therefore, we have proposed an IoT and Edge computing-based system to supervise any leakage and the cylinder's comprehensive monitoring. In our system, IoT-enabled sensors continuously collect data, and if there is a sense of risk detected in the CNG cylinder, the system can send a necessary alert to the authorized person.

10:40 ***E-Mail Assistant - Automation of E-Mail Handling and Management using Robotic Process Automation***

Arpit Khare, Sudhakar Singh, Richa Mishra and Shiv Prakash (University of Allahabad, India); Pratibha Dixit (King George's Medical University, India)

In this paper, a workflow for designing a bot using Robotic Process Automation (RPA), associated with Artificial Intelligence (AI) that is used for information extraction, classification, etc., is proposed. It would ease the effort of an individual or organization required for handling email communication. The bot is equipped with the many features that make email handling a stress-free job. It automatically login into the mailbox through secured channels, distinguishes between the useful and not useful emails, classifies the emails into different labels, downloads the attached files, creates different directories, and stores the downloaded files into relevant directories. It moves the not useful emails into the trash. Further, the bot can also be trained to rename the attached files with the names of the sender/applicant in case of a job application for the sake of convenience. The bot is designed and tested using the UiPath tool to improve the performance of the system. The paper also discusses the further possible functionalities that can be added on to the bot.

11:00 ***Impact of Abstract Factory and Decorator Design Patterns on Software Maintainability: Empirical Evaluation using CK Metrics***

Aisha Kurmangali (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Wan Nurhayati Wan Ab Rahman (Universiti Putra Malaysia, Malaysia)

Gang of Four (GoF) design patterns are the famous set of twenty-three reusable and robust solutions to certain established problems in object-oriented programming that still guides software developers and designers despite having been published in mid-90's. However, it is relatively difficult to explicitly determine the overall appropriateness and suitability of a design pattern in a software system. Thus, this work attempts to select one attribute from the McCall's software quality model - maintainability and empirically evaluate it before and after applying selected design patterns (Abstract Factory and Decorator) within a relatively simple problem scenario to keep the focus on and prove the positive effect of design patterns in object-oriented software solutions in terms of their maintainability.

11:20 ***Plant Disease Identification from Leaf Images using Deep CNN's EfficientNet***

Md. Mohsin Kabir, Akibur Rahman Prodeep, Asm Hoque and Md. Saifur Rahman (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

Detecting plant sickness is urgent according to the viewpoint of agribusiness, as illnesses frequently limit plants' creation limit and will be helpful for phytopathologist. Notwithstanding, it is challenging, regularly worldly, and tedious to perceive plant sicknesses with manual methodologies. All things considered, the more significant part of the proposed models can analyze the diseases of a particular plant. Despite relying on multi-class grouping, the model employs a multilabel layout strategy to identify both the plant and the type of disease. For the examination and evaluation, we have made our own data set from different online sources that included leaf pictures of ten plants. In our analysis, we compared various famous convolutional neural network (CNN) designs. The exploratory outcomes approve that the EfficientNet performs better in multilabel plant illness classification tasks. Additionally, we have tracked down that a CNN architecture, skip associations, spatial convolutions, and more limited secret layer network impact better outcomes in plant illness characterization.

PS3-7: PS3-7

Chair: Muhammad Syukur (Mae Fah Luang University, Thailand)

10:20 ***Facilitating Decision Making through Forensic Audit for Granting Loans and Detecting Frauds in Banks***

Anushka Kini (Symbiosis Institute of Digital and Telecom Management, India); Abhijit V. Chirputkar and Pankaj Pathak (Symbiosis Institute of Digital and Telecom Management)

In 2021, the Indian economy is predicted to grow at a rate of 11.5 percent, making it one of the fastest-growing economies in the world. The Banking Sector, like any other economy, is the backbone of the Indian economy. Since the advent of banking sector reforms and economic liberalization in 1991, it has witnessed significant growth. Even though the Reserve Bank of India

effectively regulates banks, the speed in growth brings inefficiencies in the systems due to the sheer number of transactions and the need to provide loans quickly. This results in offering Loans to various sectors without focusing on the quality of loan advances, thereby resulting in a rise in fraud in the financial industry. In the last 10-12 years, there was a considerable jump in fraud cases, especially in loans and advances, as per RBI's annual report. The Reserve Bank of India mandated banks to use forensic auditing as a fraud prevention and investigation tool in May 2015. It is gradually gaining traction as a novel and powerful tool for auditors to detect fraud early on. This paper aims to understand the role of Forensic Auditing in unearthing Bank frauds, especially while making decisions for granting Loans and Advances area like detection of frauds, by using literature review methodology, exploratory and case study analysis to give more insights into Forensic Auditing

10:40 ***Study Of Security Postures In Payment Gateways Using a Case Study Approach***

Abhishek Nagre (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The emergence of e-commerce has given birth to many big and small online businesses which are operating through apps and websites. These apps and websites use payment gateways to facilitate the online monetary transactions between the business and the customer. As these payment gateways handle sensitive customer data and act as enablers for online transactions, it is most vital to pay attention to the security of their framework. The objective of this paper is to find ways to optimize the security of the payment gateways by performing secondary research and analysing all the former cases of breaches that happened at the payment gateway level and then come up with a standardized set of security measures to prevent future attacks. This paper is unique as it will help the government to find out whether the current regulations are needed to be revised and updated. The study will also aid the companies and the payment aggregators to adopt certain must-have security aspects in their operation framework to prevent future breaches.

11:00 ***Detecting Corporate's Earnings Manipulation in Thailand***

Phasuk Nithibandanseree and Kiki Khoifin (Mae Fah Luang University, Thailand)

This study detects earnings manipulation among Thai listed firms from 2014 to 2019. We apply six accrual models, including Jones Model (1991), Modified Jones Model (1995), DD Model (2002), Modified DD Model (2002), Performance-matched Jones Model (2005), and Performance-matched Modified Jones Model (2005), to detect earnings manipulation or often referred to as earnings management, and explore the explanatory power of each model. This study utilizes 1,854 firm-year observations, and the findings indicate that the Modified DD Model (2002) is the most suitable model among six accruals models, due to this model incorporating two essential components of the company's earnings (cash flows and accruals), as other models only consider either cash flows or accruals.

11:20 ***Security And Usability of User Authentication for Fintech Data Protection in Indonesia***

Muhammad Manggala, Ida Wahidah and Ahmad Hanuranto (Telkom University, Indonesia)

Fintech application has been applied massively in the globe, but nowadays, there are several fintech services that have been hacked due to security standards in applying for user data protection is not sufficient. Based on the market survey of 350 respondents, 95% of respondents use payment fintech and 24.6% of loans fintech. The challenge of implementing fintech is to provide a convenient and fast process, while still focusing on user security and authentication processing time. 63,9% of respondents are willing to spend time on data security and 50,9% are willing to replace the device according to the expected safety. Technically, the average fingerprint accuracy rate is 91.64% and the average facial recognition accuracy rate is 91.82%. This number exceeds the minimum standard of NIST research and Google's Android is 90% of accuracy. The fingerprint processing time and the facial recognition processing time is approx. 18.24 msec and 31.83 msec. These results are applicable as the basis for implementing biometrics and factors Two-way authentication can be explained further in the regulation.

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PS3-8: PS3-8

Chair: Sarutanan Sopanik (Mae Fah Luang University, Thailand)

10:20 ***A study of Cyber-defense strategies adopted by major Public and Private sector Banks of India***

Neha Patidar (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The banking and financial services sector and banking institutions across the globe faces three hundred percent greater cyber-attacks as compared to any other industry. The increasing reliance of the modern banking sector on the internet and computer technologies to operate their businesses is the major factor behind the increasing threats and security breaches in recent years. The cyber-attacks against banks increased by 238% from February 2020 to April 2020. More and more banks are adopting Cyber Security frameworks to protect them against cyber-crimes. The goal of the study is to examine the cyber defense strategies adopted by major Public and Private sector banks of India. This paper analyzes the cyber-security and risk assessment measures taken by the banks of India. The paper further suggests additional measures to be adopted by the Banks. The study is a comparative analysis of private and public sector banks to know what banks are doing to protect themselves against cyber-attacks. Secondary data has been taken from the reports published by the Reserve Bank of India and the Annual reports of the Top Public and Private sector banks of India. The study provides implications to Banks for assessing their Cyber-security frameworks. After the comparative analysis, the shortcomings of some banks will become known. This will benefit the banks in discovering the areas where they can focus and improve.

10:40 ***Adoption Of Blockchain In Trade Finance And Its Impact On Financial Decision Making***

Abhishek Basumatary (Symbiosis International Deemed University, India); Sujata Joshi (Professor, SIDTM, India)

Blockchain has been able to create a significant impact in the fields of banking, investing and cryptocurrency in the last few years. It's recent deployment in the area of trade finance has also shaped up the area of banking and finance. Blockchain has been able to overcome the drawbacks that were eminent with the traditional methods of trade financing like cost, time and errors involved in it. Big and established companies, especially operating in the trading and shipping industry have been able to deploy blockchain methods in their financial transactions and have observed significant impacts due to it. By incorporating Blockchain, automated financial decision making is also made possible as the technology is able to confirm the authenticity of the transactions on its own. However, a comprehensive study of the technology in the area of trade finance is minimal. Thus, the aim of this paper is to study the adoption of blockchain technologies in trade finance and their impact on financial decision making, while also providing future implications for the same. The approach followed is of a case study approach that would make use of a few major use cases of established organizations in the sectors of trading & investment and technology & IT consulting with respect to the method of blockchain that they adopted. The study would be useful for academicians, the subject matter experts, and the organizations operating in the sectors mentioned as they would be able to take decisions to deploy the technology to their benefit.

11:00 ***Intention to use artificial intelligence services in financial investment decisions***

Vijayakumar Bharathi. S (Symbiosis Centre for Information Technology (SCIT) & Symbiosis International University, India); Dhanya Pramod (Symbiosis Centre for Information Technology(SCIT), Symbiosis International(Deemed University) (SIU), India); Ramakrishnan Raman (Symbiosis Institute of Business Management Pune & Symbiosis International University India, India)

Manufacturing, Financial Services and the telecom sector have made immense use of technology and automation. Use of artificial intelligence in choosing travel routes or searching for the right item to buy on an ecommerce platform is popular with postgraduate students. The paper dwelves on aspects related to student's technology readiness along with awareness about the artificial intelligence (AI) services in financial services impacts their intention to use AI in financial investment decisions. Specific aspects including Optimistic view towards technology, Innovative approach towards technology, Technological uneasiness and Lack of trust in technology and its influence on use of AI tools for taking investment decisions by post graduate students, who have work experience in the fintech domain has been studied. Results indicate Optimistic view towards technology, an innovative approach towards technology and awareness have a positive influence on their intention to use financial robots / AI tools while taking investment decisions and technological uneasiness, lack of trust in technology have a negative influence. Easiness of use and utility of the AI tools also have a significant influence on students while they consider using financial robots / AI tools for investment decisions.

11:20 ***Design and Analysis of Optimized Portfolios for Selected Sectors of the Indian Stock Market***

Jaydip Sen (Praxis Business School, India); Abhishek Dutta (Praxis Business School, Kolkata, INDIA,

India)

Portfolio optimization is a challenging problem that has attracted considerable attention and effort from researchers. The optimization of stock portfolios is a particularly hard problem since the stock prices are volatile and estimation of their future volatilities and values, in most cases, is very difficult, if not impossible. This work uses three ratios, the Sharpe ratio, the Sortino ratio, and the Calmar ratio, for designing the mean-variance optimized portfolios for six important sectors listed in the National Stock Exchange (NSE) of India. Three portfolios are designed for each sector maximizing the ratios based on the historical prices of the ten most important stocks of each sector from Jan 1. 2017 to Dec 31. 2020. The evaluation of the portfolios is done based on their cumulative returns over the test period from Jan 1, 2021, to Dec 31, 2021. The ratio that yields the maximum cumulative returns for both the training and the test periods for the majority of the sectors is identified. Additionally, the sectors which exhibit the maximum cumulative returns for the same ratio are also identified. The results provide useful insights for the investors in the stock market in making their investment decisions based on the current return and risks associated with the six sectors and their stocks.

11:40 ***Multi-Criteria Decision Analysis of the Logistics Companies using TOPSIS Model***

Weng Siew Lam (Universiti Tunku Abdul Rahman (UTAR), Malaysia); Pei Fun Lee and Weng Hoe Lam (Universiti Tunku Abdul Rahman, Malaysia)

Transportation is a vital aspect of logistics and international maritime activity. Transportation equipment has to be built strongly, tested wisely and maintained timely to prevent untoward incidences during shipping. However, the bottom lines of companies in this business line often face challenges in funding their operations and this has impeded their growths in the international arena. With this, our paper intends to analyze these logistics companies financially using a comprehensive range of financial ratios and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) model. Using a fresh framework proposed, our paper finds that CHGP is the best performing public logistics company in this business line. We hope that this paper could provide insights to the management team, prospective investors and current shareholders in the decisions to improve the economic condition of the logistics business in Malaysia to achieve the Shared Prosperity Vision 2030.

PS3-9: PS3-9

Chair: Wachira Ponboon (Mae Fah Luang University, Thailand)

10:20 ***Unpacking the efficiency of foreign direct investment: Evidence from the borders of Thailand***

Nathapornpan Piyaareekul Uttama and Mullika Jantakad (Mae Fah Luang University, Thailand)

This paper aims to evaluate the efficiency level of foreign direct investment in 22 border provinces of Thailand from 2008 to 2018 and investigate the effects of border factors associated with FDI inflow using a stochastic frontier analysis approach. The results demonstrate that the actual FDI is far below the estimated efficient level and that there exists a considerable gap (74.3%) for increasing the efficiency in attracting foreign investment inflow to the border areas. Economic size, relative labor to land endowments, boundary distance, economic corridor connectivity, and regional economic integration have positive and significant effects on FDI that tend to improve the efficiency of FDI in Thailand's border provinces.

10:40 ***Economic implications of Spectrum Bands used in 5G: A Multi-Country Study of Spectrum Allocation***

Santosh Biradar and Giri Gundu Hallur (Symbiosis International Deemed University, India)

5G technology is the latest and prevalent nowadays, not only in the field of telecommunication but in every sector such as health care, automatic transportation, smart cities, governance, agriculture, and whatnot. The role of 5G would be crucial in the growth and development of each sector and industry. 5G is an advanced wireless communication technology that uses various frequency bands for various purposes and applications. 5G would play a crucial role in low latency, enabling critical communication and offering significantly higher speed for massive IoT. The 5G system does include Ultra-Reliable Low Latency Communications (URLLC), enhanced Mobile Broadband (eMBB), and massive Machine Type Communications (mMTC). The ranges of frequency bands are basically divided into three-level, High-frequency bands, medium frequency bands, and Low-frequency bands. The paper discusses various frequency spectrum bands that 5G is/will be operating over. A detailed study

of some countries with cross-country comparison, a comparison of 5G parameters considered in the allocation of 5G spectrum bands, a study of 5G spectrum allocation status, and recommendations for spectrum allocation in India are made.

11:00 ***A Study on the impact of 5G on the Banking Industry:: An Economic Impact Perspective***

Priyanka Barman and Giri Gundu Hallur (Symbiosis International Deemed University, India)

Many banking and financial institutes have begun to cooperate with recent trends and technologies to improve services in the recent era. The emergence of 5G technology provides banking and financial institutions with new choices. The impact of the 5G ecosystem on financial enterprises and mobile banking is noticeable.5G will help modernise the banking and financial sector as part of the telecom revolution, and will be a driver for exponentially increasing clients and market share for financial institutions and financial technology. 5G is expected to increase real-time mobile commerce and high-frequency commerce, according to the financial services industry. Here in this study, we have tried to present an overview of Banking 4.0, Branch-less banking and Open banking and how 5G will help achieve it. In this paper, we have tried to aggregate insights from various sources related to 5G use cases from the perspective of the Banking Industry both from Indian perspective as well as the world.

11:20 ***To Predict Customer Churn By Using Different Algorithms***

MD Sayedur Rahman (Bangladesh University of Business & Technology - (BUBT), Bangladesh); Md Sahrial Alam and Md Ikbal Hosen (Bangladesh University of Business and Technology, Bangladesh)

Customer churn prediction is the supreme thing for every company. Every company is facing that issue. A company can easily predict how many customers will stay and take their service and how many customers will omit their service. This paper predicts if their customers will take their service in the future or not. In our paper, we have used the " Impact Learning" algorithm to predict customer churn. The data is trained by the impacts of features from the intrinsic rate of natural increase in the impact learning algorithm. Here, the training set of data is numerical data. Our proposed model is implemented by using three stages namely data collection, identifying null value, and data preprocessing. This paper has also shown the performance comparison between Logistic regression, Impact learning, and Artificial Neural Network algorithm. From the comparison, we can see that the Impact learning algorithm gives the best and higher accuracy than the other two algorithms.

11:40 ***How Macroeconomic Variables Affect Islamic Banking in Indonesia, Malaysia and Pakistan***

Dewi Ayu Muliani (University of Syiah Kuala & Syiah Kuala University, Indonesia); Suriani Suriani (Universitas Syiah Kuala & USK, Indonesia); Chenny Seftarita (Universitas Syiah Kuala, Indonesia)

Islamic banks have continued to experience significant growth in the last few decades. Based on IFSB data, Muslim countries have always managed to reach the top position for years. However, this condition is not experienced by Indonesia and Pakistan, which have the largest Muslim population. Using data from three countries; Indonesia, Pakistan and Malaysia, we estimate the relationship between Islamic bank assets and macroeconomic variables during 2001-2020. Using Panel Vector Error Correction Model (PVECM) to analyze the relationship between total assets (TA), exchange rate (ER), money supply (M2), and GDP per capita (GDPC). The results of the study found that there was a long-term relationship between research variables. However, in the short term only the money supply variable (M2) affects the total assets of Islamic banks (TA).

PS3-5: PS3-5

Chair: Patcharaporn Panwong (Mae Fah Luang University, Thailand)

10:20 ***XAI Approach to Improved and Informed Detection of Burnt Scar***

Tonkla Maneerat (Mae Fah Luang University & AIE Center-Mae Fah Luang University, Thailand)

Forest fire is a problem that cannot be overlooked that occurs every year and spans many areas. GISTDA has recognized this problem and created the model that is used to map burn scars using satellite imagery as input and variable for the model. However, it does not make sense to trust the machine's decision-making to solve sensitive problems, it is necessary to have more than a percentage of the prediction accuracy. Reasoning and annotation of the results are essential for this. The XAI approach is the answer to this problem. In this work, we have used the SHAP approach for describing predictive variables of complex

neural models such as DNN, which can be used to optimize the model and provide overall accuracy up to 99.85 % for this work. Moreover, to show stakeholders the reason and the contributed factors involved such as the various indices that use the reflectance of the wavelength (e.g. NIR and SWIR). Therefore, the purpose of this study is to use the existing model to optimize the forest fire burn scar classification and describe the predictive features for decision-making by those involved.

10:40 ***Scene Classification with Simple Machine Learning and Convolutional Neural Network***

Simon Yosboon (Mae Fah Luang University & AIE Center, Thailand)

Scene classification has drawn a great deal of attention among scientists in the past decade. It focuses on developing a method that can be used to classify scene images into pre-defined categorizes. Unlike human, identifying discriminative features are still the main burden to accomplish this goal. As such, a question arises to determine the appropriate level of feature descriptors, i.e., fine-grained texture/shape or recognizable objects/components. In this paper, we like to compare if a simple machine learning method can compete with the deep learning algorithm. Since the former requires a feature vector of each training instance, we have come up with a method to extract object-based features from images. YOLOv3 that is a pre-trained model for object detection is exploited to produce the object-based features. Following that, four machine learning methods are evaluated using this training set, while the deep learning model is built using original images. The experiment shows simple machine learning models with object-level features can match the performance of deep learning, which is more demanding in terms of computational resources and time.

11:00 ***The Detection Method for XSS Attacks on NFV by Using Machine Learning Models***

Korrawit Santithanmanan (Mae Fah Luang University & AIE Center, Thailand)

This paper focuses on Cross-site Scripting (XSS) vulnerabilities that occur in the web-based management interface of Cisco Enterprise's Network Function Virtualization Infrastructure Software (NFVIS). This paper explores one of the security concerns called openness and programmability on the control plane of NFVI that leads to XSS attacks. The attacker uses the XSS to inject malicious code, typically JavaScript, and send it to other users in the form of a URL to identify which URLs are malicious, the Machine Learning methods including k-NN, Decision Tree, SVM, and Gaussian Naive Bayes classification model are used in this paper to classify the pattern of the attacks. In addition, the performance of each model is also evaluated.

11:20 ***Finding The Available Website Name By Using Naive Bayes Classification***

Kanokphon Kane (Mae Fah Luang University & AIE, Thailand)

This study aims to positive good text or negative text sentiment on websites. The property consists of the URL of the website and results in a positive website and a negative website that should be blocked in access to that. In this research, a computational approach for website classification based on features retrieved from URLs is proposed to must compare the concept of classification with the Multinomial Naive Bayes of independence property data by comparing the ideal models for discrete data Multinomial Naive Bayes. In addition, have been used other machine learnings are Decision Tree and Logistic Regression to compare which method is suitable for the analysis of this data set and which has the most accuracy with use data divided into 3 sets as follows: Training data, Test data, and External data about racist and sexist tweets sentiment to provide machine learning. The result of the Multinomial Naive Bayes has the highest accuracy of 95.14 percent for the training model.

11:40 ***Quantifying the Severity of Loose Smut in Wheat Using MRCNN***

Deepak Kumar (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Wheat is one of the most common staple foods in the world. According to national agricultural research, an entire 40% of wheat grain quality has been decreased due to wheat diseases. The wheat disease mainly affects the wheat plant. Sometimes, the wheat disease damages the whole wheat plant. When the whole wheat plant is damaged, the quality of wheat grain is decreased. There are different varieties of wheat diseases such as fungal, bacterial, and virus-based diseases. One of the most common loose smut fungal diseases that decrease the grain quality in each wheat spikelet. Therefore, the identification of wheat diseases is important. In this paper, an automatic system for the identification of loose smut wheat disease along with its severity is proposed. The identification system uses 2000 RGB images which have been collected from secondary sources. Among all datasets, a total of 800, 700 images have been randomly selected for training and testing purposes in the Mask RCNN model. Through Labelme software, the images are labelled with ground and truth labels. During identification, our proposed system achieves a 97.8% F1 score for loose smut identification with bounding boxes. The severity of loose smut has been calculated

through the disease severity index. With the help of DSI, a total of 63% severity for loose smut has been estimated in different wheat spikelets.

PS3-6: PS3-6

Chair: Pattaramon Vuttipittayamongkol (Mae Fah Luang University, Thailand)

10:20 ***Improved Shopping Experience Through RFID Based Smart Shopping System***

Angel Yong (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia)

Shopping is considered as an essential activity for many households and is negatively impacted ever since the COVID-19 pandemic had begun. People are panic buying and crowding without social distancing and practice hygiene after exchanging physical touch with objects or cashiers at retail stores. A Smart Shopping System that utilizes RFID and integrated with mobile website technology can improve efficiency and effectiveness for customers to shop even during a pandemic in a more controlled manner. It can be achieved by integrating closely both hardware and software over an active internet connection to send and receive data for real-time updates for each respective customer. The research aims to facilitate users for an improved shopping experience that highlights the accessibility of easy, contactless purchasing, engaging marketing and simultaneously reduces direct contact with public possessions during the coronavirus (COVID-19) pandemic. An extensive discussion of the existing similar systems reviews, literature review and the current developments are performed in depth. The research gathered public insights through a quantitative research approach and applied the gather data for meaningful information in order to recommend an efficient solution. With the creation and visualization of a prototyping model, the researcher demonstrated how a Smart Shopping System could achieve efficiency and effectiveness in a retail store on a small scale.

10:40 ***IoT Based Reverse Vending Machine to Identify Aluminium Material and Allocate Point Reward***

Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia); Kwang Qin Yi (Asia Pacific University of Technology and Innovation (APU), Malaysia)

A Reverse Vending Machine (RVM) allows people to exchange their recyclable items for rewards. These are machines that can identify, sort, collect and process used drink cans. The research helps to understand how IoT can be applied in the RVM system to increase automation and improve efficiency. The reason for using quantity measurement on giving rewards has been explained along with facts. Every element associated with each layer of system architectures is thoroughly clarified and elaborated in the domain segment. Several related works and similar systems are presented and discussed, concluding that a cashless approach can more likely attract people and is more secure and efficient to use. Finally, this research provided a straightforward procedure to implement the Reverse Vending Machine (RVM) with ease . Every system has its benefits and drawbacks; the limitations of the proposed method are listed for further enhancement.

11:00 ***Recommendations for Developing an IoT based Smart Mirror with Gesture Control***

Chiew Cae-Li (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia)

Mirrors are in use of humans for centuries as it plays an important part in their lives. A conventional mirror mainly serves users to only view their reflection. On the other hand, a smart mirror is a mirror with additional capabilities. In this exponentially developing world, information is always right at our fingertips. However, the presence of various options of gadgets may cause difficulty for users when keeping track of their productivity unless they are all in sync. Integrating technology into something which people use daily (the mirror), fits in with their hectic life requirements seamlessly. This research provides recommendations for developing a smart device ('Smart Mirror') which aims to simplify the users' lives by allowing them to multitask while being productive. This research first reviews the existing literature and similar systems and then provides recommendations for hardware, tools and

development methodology for developing a Smart Mirror. Finally, a quantitative research approach is used to accumulate and analyse requirements in this regard.

11:20 ***Intelligent Computing based Soccer Sports Management for Effective Estimation of Match Outcome***

Karun Madan and Kavita Taneja (Panjab University, Chandigarh, India); Harmunish Taneja (DAV College, Sector 10, Chandigarh, India)

The integration of intelligent computing with sports management can give new dimensions to sports globally. In this paper, a comprehensive study of major intelligent computing techniques for addressing various challenges and issues in sports management is presented. An experimental study has been conducted by implementing three machine learning techniques i.e., SVM, Decision tree and Random forest for estimating the match outcome on different match scenarios. This experimental study has been performed on a standard dataset on English Premier League soccer tournament to estimation the match outcome. The estimation of match outcome in soccer is a difficult task as it is stochastic process and many probabilistic factors can affect the final results.

11:40 ***Assessment of Building Damage on Post-Hurricane Satellite Imagery using improved CNN***

Adit Ishraq and Aklima Lima (Bangladesh University of Business and Technology, Bangladesh); Md. Mohsin Kabir and Md. Saifur Rahman (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

Damage assessment is one practical method for adopting best practices for obtaining speedy and dependable attention during natural calamities such as a hurricane. Lately, calamity researchers have often used satellite imagery to predict the number of damaged properties. It can detect the damaged structures in time by integrating satellite imagery and Convolutional Neural Network (CNN) transfer learning. Consequently, choosing the variables of transfer learning success in this scenario is demanded. To identify damaged structures post-hurricane, we introduce a technique based on VGG16 that utilizes publicly available satellite imagery and geolocation features of the affected region. The global average pooling layer substitutes the fully connected layer to minimize parameters and enhance convergence speed. The experimental results indicate that the proposed model's overall accuracy for post-hurricane image classification can reach 0.98 percent. Our proposed method approximates the classical CNN, VGG16, VGG19, AlexNet and surpasses their performance outcome.

Thursday, March 24 12:00 - 13:15 (Asia/Bangkok)

Lunch: Lunch

Thursday, March 24 13:15 - 14:00 (Asia/Bangkok)

PN3: Plenary Session 3

Solving Cardinality Constrained Portfolio Selection Problems Using Closest Correlation Matrices

Thursday, March 24 14:00 - 15:40 (Asia/Bangkok)

PS4-5: PS4-5

Chairs: Houda Alaya (BADM Tunis Business School, University of Tunis, Tunisia), Tipavinee Suwanwong Rodbundith Rodbundith (Mae Fah Luang University, Thailand)

14:00 ***Personalized production in Industry 4.0: a CONWIP approach***

Daniel Rossit and Guido Vinci-Carlavan (Universidad Nacional del Sur, Argentina)

Production technologies based on Industry 4.0 allow the capacity and flexibility of production systems to be increased, enabling mass customization of production. In this work, a production problem is considered where the customization of production is extreme, resulting in unique products. This type of production is known as One-of-a-Kind Production (OKP). Naturally, this type of production places great demands on the planning system, since the standardization of production is reduced to a minimum. In this sense, it is proposed to use a production control strategy based on CONWIP, which seeks to maintain the level of work-in-progress at constant levels. In turn, to improve the performance of the CONWIP strategy, new dispatch rules are studied and designed to improve the level of service provided to the client

14:20 ***An Overview of the Cash Transportation Problem***

Houda Alaya (BADM Tunis Business School, University of Tunis, Tunisia)

One of the relatively new study topics in Vehicle Routing is the Cash Transportation Problem. This problem takes into consideration the security in planning vehicle routes. Few papers have focused on the cash transportation problem. Minimizing the travel cost and/or minimizing the transportation risk are the objective functions considered in these problems. This paper is the first overview of the cash transportation problem addressed in the literature. We classify these problems into two categories, mono-objective and multi-objective problems.

14:40 ***Evaluation of a low-cost on the Road Unit for augmenting traffic management decision making***

Christos Spandonidis (Prisma Electronics, Greece); Fotios Giannopoulos (Prisma Electronics S.A., Greece); Elias Sedikos (Prisma Electronics UK, United Kingdom (Great Britain)); Dimitris Reppas and Kostas Sakatis (Prisma Electronics S.A., Greece); Panagiotis Theodoropoulos (University of Patra, Greece)

The advent of the 4th Industrial Revolution has completely changed the landscape of many scientific disciplines. An extension of the Industry 4.0 revolution concerns the Internet of Vehicles, integrating interconnected vehicles in a network exchanging information, rapidly enhancing efficient transportation and the passengers' and pedestrians' safety. In the context of the ODOS2020 project, a sensing networking architecture is presented to conduct vehicular detection based on MEMS magnetometers, as well as allowing predictive maintenance of the infrastructure, contributing to the increase of road safety. The integrated solution is intended to be of low cost and cover all types of vehicles. The focal point of the current work is on evaluating the prototype On-the-Road Unit laid on the road for detecting bypassing vehicles and measuring their speed and movement direction by employing low-cost magnetic sensor modules. The developed system is able to detect vehicle movement, alongside its direction and speed using a single device acquiring data from a number of low-cost sensors. The developed system has been evaluated in controlled and real environments.

15:00 ***Coalition Formation for Horizontal Supply Chain Collaboration: A Multiobjective Approach***

Mirna Abou Mjahed (Neoma Business School, Lebanon); Fouad Ben Abdelaziz (NEOMA Business School, France); Hussein Tarhini (American University of Beirut, Lebanon)

By collaborating horizontally, firms are expected to achieve considerable improvement. Most optimization approaches in coalition-based SC collaboration are single objective targeting cost reduction or profit maximization. Real-world decision problems usually require the investigation of more than one criterion to achieve a sustainable progress. In this paper, we study the collaborative facility and fleet sharing among firms at the same horizontal layer of the supply networks and explore the benefits of forming coalitions. We consider the case of suppliers operating their own distribution centers. Such firms have incentives to minimize their operational costs by optimizing inventory levels at warehouses, replenishment process and distribution to customers. The aim is to look at the trade-off between cost of the logistic service (warehousing and transportation) and maintaining customer satisfaction and loyalty by keeping, when possible, delivery service internal to each firm. The problem is a coalition formation modeled as a cooperative multiobjective game.

15:20 ***Applications of Pandemics Impact on Supply Chain Decisions***

Maysaa Khalil Jaafar (NEOMA Business School, Lebanon); Fouad Ben Abdelaziz (NEOMA Business

School, France); Bacel Maddah (American University of Beirut, Lebanon)

We analyze the impact of pandemics disruptions on the decision related to supply chain management. Two models are developed and a closed-form solution is obtained for the optimal order size. In our first model, we consider the classical EOQ (Economic Order Quantity) model with Bernoulli supply having a disruption probability related to the pandemic situation. In our second model, we consider the classical EOQ (Economic Order Quantity) model with Binomial supply under pandemic situation. At last, we suggest ideas for future research.

PS4-6: PS4-6

Chair: Sarutanan Sopanik (Mae Fah Luang University, Thailand)

14:00 ***A Low-Cost Embedded Security System for UAV-Based Face Mask Detector Using IoT and Deep Learning to Reduce COVID-19***

Nashwan Othman (Knowledge University, Iraq); Ilhan Aydin (Firat University, Turkey & Firat, Turkey)

Nowadays, the most effective method against the virus is wearing a mask. Hence, it is fundamental to wear a mask appropriately at open places like general stores and shopping malls. This paper proposes a novel human face mask detection method from UAV-captured frame sequences to solve the aforementioned problem. The proposed approach involves an offline stage and an inference stage. The offline stage generates the mask or no-mask by utilizing a convolutional neural network. We trained our model on a face mask dataset, and this enhancement allows the suggested system to obtain high accuracy in detecting unmasked people. The inference stage uses the already generated model to detect no mask humans and sends the alert to the smartphone-based Internet of Things. At this stage, Jetson nano was used to implement an embedded powerful real-time application for UAV-based face mask detection that runs at high frames per second. The proposed system monitors and detects people who have not worn a mask. Also, we used IoT techniques to send the pictures and notifications to the nearest police station to apply forfeit when it detects unmasked people. The main contributions in this paper lie in adjusting the deep learning, embedded platforms, IoT techniques, and Tello drone, generally dedicated to detecting unmasked people at a low cost. On average, detection accuracy is 99% based on the experimental evaluation of the proposed deep learning model for UAV-based face mask detection on the provided dataset. Overall, the proposed method can help decrease the spread of diseases such as COVID-19 and other transmissible diseases.

14:20 ***Wireless Sensor Networks Lifetime Improvement Using Greedy Algorithm***

Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Berhan Oumer and Eyayaw Zewdu (Arba Minch University, Ethiopia)

One of the most significant difficulties in Wireless Sensor Networks (WSNs) is energy efficiency, as they rely on minuscule batteries that cannot be replaced or recharged. In battery-operated networks, energy must be used efficiently. The network lifetime is an important metric for battery operated networks. Several approaches are available to improve the network lifetime; such as data aggregation, clustering, topology, scheduling, rate allocation, routing, and mobile relay. Therefore, in this paper, the authors present a method aimed at improving the lifetime of WSN nodes by using a greedy algorithm. The proposed Greedy Algorithm method is used to extend the network's lifetime by dividing the sensors into a number of disjoint sets while satisfying coverage requirements. Comparatively the proposed greedy algorithm has improved network lifetime than heuristic algorithms. The method was able to generate a greater number of disjoint sets.

14:40 ***A Low-Cost Embedded Car Counter System by using Jetson Nano Based on Computer Vision and Internet of Things***

Nashwan Othman (Computer Engineering Department, College of Engineering, Knowledge University); Zahraa Zakariya (Knowledge University, Iraq); Bishar Ibrahim (Duhok Polytechnic University, Iraq)

With the increasing volume of cars in traffic and the global traffic increasing exponentially, it has become critical to manage traffic as a challenge in the most developed countries. To address this issue, the intelligent traffic control system will use

automatic vehicle counting as one of its core tasks to facilitate access, particularly in parking lots. The primary benefit of automatic vehicle counting is that it allows for managing and evaluating traffic conditions in the urban transportation system. The new era of technologies such as the Internet of Things and computer vision has transformed traditional systems into new smart city networks. Because of the proliferation of computer vision, traffic counting from low-cost control cameras may emerge as an appealing candidate for traffic flow control automation. This paper proposed a low-cost embedded car counter system using a Jetson nano card based on computer vision and IoT technologies to implement the offered system. In the proposed system, we apply a combination of background subtraction and counters, trackable objects, centroid tracking, and direction counting. Moreover, we implement the MoG foreground-background subtractor method. The proposed system is connected to the Internet using Telegram API to send notifications to smartphone hourly to analyze traffic congestion. In addition, we compared the performance of Jetson nano with the Raspberry Pi4 platform.

15:00 ***Peculiarities of Application of Information Technologies in Footbal and Futsal***

Myroslav Panchuk (Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine); Taras Panchuk (Ukraine, Ukraine); Andrii Panchuk (Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine)

The paper investigates and systematizes materials on the application of information technologies in the sphere of football and futsal.It is established that, as of today, a number of information technologies are in operation, which help in decision making for the successful organization of sports competitions, effective performance of training process, and prevention of sports injuries. Currently, one of the most timely topics is the introduction of video assistant referee (VAR) system to the competition process. The novelty of the paper is the execution of an investigation of (VAR) system application peculiarities in the football championship of Ukraine and perspectives of the system use in the course of futsal competitions.Also, a correlation between the introduction of effective information technologies to the training process and an improvement of the team's results along with a decrease in sports injury rate was established. Keywords - information technologies, football, futsal, video assistant referee (VAR) system.

15:20 ***A Methodology for An Intelligent Legal Agent***

Furkh Zeshan (COMSATS University Islamabad, Lahore Campus, Pakistan); Shahzad Sharif (COMSATS University Islamabad (CUI), Lahore Campus, Pakistan); Adnan Ahmad (COMSATS University, Pakistan); Syed Tanweer Shah Bukhari and Wajahat Qazi (COMSATS University Islamabad (CUI), Lahore Campus, Pakistan)

Due to the ever-increasing of legal cases in courts, thousands of cases cannot be processed on time due to inadequate resources and inexperienced Lawyers. The situation can be improved with automated systems like the usage of judicial decision support systems in courts. In this regard, numerous research studies exist in which legal case resemblance-based forecasting methods by involving chatbots are proposed. However, a study in which two-way communication with a chatbot for a legal case discussion and the recommendation is not proposed. So, keeping in view the dire need for a system that may facilitate judiciary and Lawyer's community, Intelligent Legal Agent methodology is proposed in this paper to assist Lawyers and Judicial Members in decision-making.

PS4-3: PS4-3

Chair: Supannika Khuanmuang (Mae Fah Luang University & School of Management, Thailand)

14:00 ***Management decisions modeling using the intellectual capital potential***

Ivanna M Dronyuk (Lviv Polytechnic National University, Ukraine); Iryna Moyseyenko (Lviv State University of Internal Affairs, Ukraine); Roman Zhelizniak (Lviv Polytechnic National University, Ukraine)

To analyze the management risks and determine the level of their impact on the the enterprise's results, it is proposed to introduce internal monitoring of multiplicative indicators of resource potential. The internal monitoring system provides a combination of rapid methods of determining financial potential and the level of use of intellectual assets. Modeling of

multiplicative indicators for using of financial potential and intellectual resources is an effective tool of administrative decisions maintenance of acceptance. The presented algorithm of the efficiency for using intellectual assets analysis of provides the decision and acceptance of administrative decisions problems of risk reduction. Risk minimization is ensured through the factor analysis using the intellectual resources potential.

14:20 ***Role of Human Intuition in AI Aided Managerial Decision Making***

Kumeel Rasheed (Bahria University Islamabad, Pakistan); Merium Fazal Abbasi and Muhammad Bilal (Bahria University, Pakistan)

Managerial decision making is considered to be an interplay of human intuition and rationality. With the advent of Artificial Intelligence (AI), the rational part of decision making can be delegated to algorithms because of their superior efficiency in this domain. But intuitive part cannot be entrusted to algorithms with same ease, as it involves affective element which is considered to be a distinctive feature of humans. This paper is aimed at determining the role of intuition in Ai-aided decision making and ways through which intuition can be incorporated into AI-aided decisions. By reviewing literature on the subject of decision making, AI and intuition; it has been concluded that intuition is crucial for strategic decisions. It can be integrated in AI aided managerial decisions in two ways i.e. by developing a model that makes decisions by interaction of humans and AI, or by replicating human intuition through AI thus leading to completely autonomous decision making system that has emotional intelligence as well.

14:40 ***Impact of Business Strategy On Project Management Elements Focus Moderating Role of Competition Attributes in Textile Industry***

Kumeel Rasheed (Bahria University Islamabad, Pakistan); Muhammad Bilal and Merium Fazal Abbasi (Bahria University, Pakistan); Bakhtawar Shah Alam Khan (University of Portsmouth, United Kingdom (Great Britain)); Tausif Zahid Chowdhury (Winchester University, United Kingdom (Great Britain)); Iqra Yamin (Bahria University, Pakistan)

In the textile sector, this study analyzed the impact of company strategy on project-management-elements-focus with the moderating effect of competitive characteristics. Business strategy was used as an independent variable in this research. Competition qualities, on the other hand, have been deemed a moderating influence. Furthermore, the dependent variable was chosen to be project-management-elements-focus. Meanwhile, the textile industry of Pakistan has been chosen as the sector to research the link between business strategy, competitive qualities, and project-management-elements-focus in this study. To assess the relationship between variables in this study, an adaptive structured questionnaire based on a 5 Likert scale was used as the research tool to collect data from respondents (project directors, project managers and project supervisors working in the construction industry of Pakistan). Whereas a sample size of 234 respondents were chosen to reflect the full population of 600 people. The information gathered by the questionnaire, which was sent to 234 people, was then evaluated using statistical tools including correlation and regression in SPSS Software. According to the findings of correlation and regression analysis, there is a substantial link between business strategy, competition qualities, and project-management-elements-focus in Pakistan's textile sector. Eventually, the findings of this study show that in Pakistan's textile sector, business strategy has a positive influence on project-management-elements-focus, whereas competition characteristics favorably moderate the link between business strategy and project-management-elements-focus.

15:00 ***Optimal design of a hybrid photovoltaic-wind power system with the national grid using HOMER***

Marwa Mallek (University of Sfax, Tunisia); Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia); Jalel Euchi (GIAD Laboratory, University of Sfax, Tunisia); Yacin Jerbi (National Engineering School of Sfax (ENIS), Tunisia)

Renewable energy sources are certain to play a key role in future energy generation due to the rapid depletion of conventional sources of energy. Solar and wind energy are the major renewable energy sources that have the potential to meet the energy crisis to some extent. However, such sources when explored independently are not completely reliable because of their unpredictable nature. Whereas their use as hybrid energy systems seems to be more reliable and cost-effective, due to the complementary nature of these two resources. In recent years, the research interest towards the utilization of hybrid energy systems in desalination plants. This paper aims to optimize several hybrid energy system models consisting of solar PV, wind, and the national grid in a desalination plant in Tunisia. Optimization is based on the techno-economic analysis of the proposed

energy system is performed by using HOMER simulation software. The simulation will be focused on the net present costs, Levelized cost of energy, produced excess electricity, the Renewable Fraction of Energy, and the reduction of CO2emission for the hybrid energy configurations. Results show that the system photovoltaic, wind, and the national grid is the best energy system installed in the desalination plant.

15:20 ***The impact of the Covid-19 crisis on the liquidity of cryptocurrencies***

Sana Gaied Chortane (Institute of Higher Business studies of Sousse)

We examine the impact of the Covid-19 crisis on the liquidity of crypto currencies. We use 10 crypto currencies for the period from July 31, 2019 (before the crisis) to December 31, 2020 (in the Covid -19 era). We proceeded to calculate the liquidity of the ten crypto currencies during the period from July 31, 2019 to December 31, 2020 using the bid-ask spread AR estimator of Abdi and Ranaldo (2017) to which we then applied a regression (ARMA) to each crypto currency. The results show that the crisis had a positive effect on the liquidity of the majority of the crypto currencies in our sample with the exception of Tether (TET). The crypto currencies neither reacted in the same way to the Covid 19 crisis nor reacted with the same magnitude. Thus, the crypto-currency market as a whole does not depend on other financial markets and that the latter do not affect it significantly.

PS4-4: PS4-4

Chairs: Akkhaporn Kokkhangplu (Mae Fah Luang University & Khon Kaen University, Thailand), Meryem Masmoudi (University of Bahrain, Bahrain)

14:00 ***Analysing Cyber Security and Data Privacy Models for Decision Making among Indian Consumers in an e-commerce environment***

Richa Pramanik (Symbiosis Institute of Digital and Telecom Management, India); Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

While e-commerce evidently addresses consumer needs, businesses and their customers remain vulnerable to cyberattacks that could already be instituted against them. This paper presents an understanding of the antecedent factors that engender concerns among Indian consumers while using e-commerce websites. It aims to measure the perceived threats and data privacy issues that influence an individual's approach to making a risk-informed buying decision. A Quantitative Method of approach has been adopted for this study. A preliminary set of five-point Likert-style questions with several subscales was designed and distributed online to a sample of 165 participants. The results were then evaluated using Exploratory Factor Analysis (EFA) technique to test the hypothesis. Factor Analysis model of the survey underlined several parameters of an individual's perception towards their personal information like- accountability and trust issues, geopolitical and data sharing concerns, and cyber security cognizance. It also provided an empirical understanding of the consumer-perceived model and decision-making behavior for an e-commerce transaction. Based on the findings, better industry-standard e-security frameworks and models can be implemented towards the consumers' decision-making process. Knowledge from all these aspects can be applied to serve the research and practitioner groups. This study approaches a substantial research gap by providing real-time data for the variables affecting Indian customers' attitudes towards security and data privacy concerns as online shopping transactions increase. The results add to a growing body of literature identifying and developing advanced ways to reevaluate the existing compliance strategies across e-commerce websites, making it conducive for the customers.

14:20 ***Neuromarketing in Malaysia: Challenges, limitations, and solutions***

Ahmed H. Alsharif (University Teknologi Malaysia, Malaysia); Nor Zafir Md Salleh (Universiti Teknologi Malaysia, Malaysia)

Neuromarketing has induced great interest in academia and professionals due to the benefits of this field in providing more accurate information about consumers' unconscious/subconscious responses, which is beyond traditional marketing methods such as questionnaires to improve marketing theory and practices. However, although neuromarketing research has developed abroad, its research in both academic and professional is still very limited in Malaysia. This paper aims to explore the experts' perceptions of why the use of neuromarketing is not performing at its required and the solutions to improve neuromarketing implementation in the Malaysian market. For data collection, semi-structured interviews with 16 experts who matched the

set criteria have been adopted. Once the data had transcripted and then categorized into units with common themes. The findings revealed that most interviewees have agreed about several issues which limited the expansion of the neuromarketing implementation in the Malaysian market, such as lack of tools, experts, funding, and ethical issues. Thus, participants have suggested some potential solutions to overcome the limitations and challenges such as collaboration between colleagues, universities, and industry, compliance with the laws and regulations, and funding. The authors have recognized a gap of knowledge in this area; therefore, these findings have significantly contributed to the existing body of the literature and invite more studies to elucidate the situation. Moreover, qualitative research is required to test and measure items revealed from this study's findings.

14:40 ***Does Perceived Organizational Support Have a Moderating Effect on Whistleblowing Intentions?***

Mirna Indriani (Universitas Syiah Kuala, Indonesia); Nadirsyah Nadirsyah (Syiah Kuala University, Indonesia); Dinaroe Dinaroe (Universitas Syiah Kuala, Indonesia)

The purpose of this research was to investigate the impact of Personal Cost (PC), Organizational Commitment (OC), and Perception of Organizational Support (POS) on Whistleblowing Intentions (WI). An online survey of 150 employees in the government sector in Aceh Province was used to obtain data and the Partial Least Square Structural Equation Model (PLS_SEM) was utilized to test the hypotheses. The findings indicated that the higher the personal cost, the less likely a person wanted to utilize whistleblowing as a technique to prevent fraud, even when there was a feeling of strong organizational support. This study did not indicate that organizational commitment affects whistleblowing intention. Nevertheless, the result did show that a sense of organizational support affected the link between organizational commitment and whistleblowing intention to fraud. This study demonstrated that the impression of organizational support was a mechanism that might influence a person's behavior when committing to action.

15:00 ***Ethical and social perception of No-bra culture in Thailand***

Kanyarin Klinkosumsivadol, Thidarat Phubaengmai, Paveethida Taikul, Naruemin Bootchalee and Tosporn Arreeras (Mae Fah Luang University, Thailand)

This research aims to study the opinion of Thai citizens toward women's free nipple culture. There are a lot of movements about women's rights worldwide, whether the free nipple campaign or case study. In Thai society, people are rarely interested in No-bra culture, which is one of the most significant issues ignored for a long time in Thailand even though Thai citizens used to free nipples before. Researchers collected data from 416 people. These people were selected from random populations in some areas in Thailand. To collect the data, researchers used an online questionnaire called Google form to collect the qualitative and quantitative. These were applied to the data analysis by using the Likert scale. The number of respondents knew the No-bra or braless culture and have seen the people who go No-bra everywhere. They disagree with whether the No-bra movement is contrary to the old norms or good morals such as Thai women are reserved, and No-bra is one of the reasons for sexual harassment such as verbal Conduct, visual Conduct, etc. Hopefully, this research will be helpful to those who would like to learn about free nipples culture-influencing society to become more aware of women's rights.

15:20 ***Capital Structure and bank performance under IFRS adoption***

Bayan Mohammed (Near East University, Turkey); Aliya Isiksal (Near East University, Faculty of Economics and Administrative Sciences, Turkey); Ala Fathi (Near East University, Turkey); Sameer Hamdan (Near East University, Cyprus)

This paper attempts to investigate the association among bank capital structure and performance with the IFRS implementation of Turkish banks. The current work employs Dynamic Ordinary Least Square 'DOLS' and Fully Modified Least Square 'FMOLS' to examine panel data of listed Turkish banks. The findings demonstrate that IFRS adoption has a significant and positive effect on Return on Equity 'ROE' and Return on Assets (ROA) in Turkish listed banks. The findings show that Leverage in Turkish listed banks has a negative effect on Return on Equity (ROE) and Return on Assets (ROA). Consequently, the performance of banks is negatively affected by leverage. The bank's size has a significant negative influence on the stock price (SP) and (ROE) of listed banks in Turkey but does not affect the ROA. Banks' rate of growth significantly affects ROE. Thus, adopting IFRS criteria by listed banks in Turkey increases the bank's performance. The current article thus indorses the utilization of IFRS principles in Turkey's banking industry, which will impressively develop the bank's performance

PS4-9: PS4-9

Chair: Popkarn Arwatchanakarn (Mae Fah Luang University, Thailand)

14:00 ***A literature review for Green Smart Home Delivery Problem in urban environments***

Haifa Jammeli (ISG TUNIS, Tunisia); Jerome Verny (NEOMA Business School, France)

Due to growing urbanization, changing climatic and lifestyles, Green logistics has become a global concern. Generally, the objective of a logistics operation is to achieve customer service goals by minimizing costs and maximizing profits. However, in recent years, several companies want to proactively add sustainability objectives, reduce their carbon footprint and support the ongoing efforts to prevent climate change. These considerations have an impact on the transportation concepts and designs. Therefore, a new research problem called Green Smart Home Delivery was introduced. This paper is an overview of the operational research models developed for Green Smart Home Delivery Problems.

14:20 ***Using RapidEye satellite images for the sustainable management of the extension of El Jadida city (Morocco)***

Ikram El Mjiri, Abdelmejid Rahimi, Abdelkrim Bouasria and Mohammed Bounif (Chouaib Doukkali University, Morocco)

The ever-increasing urban extension and the many changes it provokes are the source of many problems both inside and outside the city. To address these issues and manage the city intelligently, one must first assess and map land use changes resulting from urban sprawl. Thus, the main objective of this study was to quantify the urbanisation of El Jadida between 2010 and 2020 to highlight its impact on the environment and make it a smart city. Maps of the spatial distribution of the built-up area were produced based on two high-resolution satellite images (RapidEye). These images were subjected to a series of digital image processing techniques to individualise the built-up areas. The comparison between the two images generated (2010 and 2020), has allowed to deduce that the city of El Jadida has recorded during this period an urban growth of approximately 331 ha, an increase of 17% in 10 years. This comparison also shows that the urban expansion in El Jadida is random and generally to the detriment of agricultural land. Thus, to manage this urban expansion intelligently, it must be directed towards non-agricultural land along the Atlantic coast

14:40 ***Applying machine learning to the study of environmental dynamics and sustainable management of the Argan grove in the El Guerdane region (Souss plain, Morocco)***

Abdelmejid Rahimi, Ikram El Mjiri and Abdelkrim Bouasria (Chouaib Doukkali University, Morocco); Fatna Zaakour (Université Chouaib Doukkali, Morocco & Higher School of Technology (EST) Sidi Bennour, Morocco)

The forest ecosystem of the Argan grove in the region of El Guerdane, located at the heart of the plain of Souss, has experienced significant natural and anthropogenic pressure in recent decades, leading to observable changes in the landscape of the Argan grove. However, the nature and intensity of these changes remains unclear. This study aimed to draw up an inventory of the dynamics of environmental changes between 1985 and 2017 through the diachronic exploitation of Landsat satellite images. It appears that the support vector machine (SVM) algorithm is an appropriate approach to highlight the evolution of this environment. It helped to identify not only the changes that occurred in 32 years, but also to understand that the extension of the built environment and modern takes place at the expense of the argan tree stands. Thus, the loss of about 40.60% of the Argan forest area in this region during this period has negative impacts on biodiversity, the environment, the economy, and cultural and regional history; therefore, a quick and effective intervention could be a positive action for the sustainable development of this unique forest area

15:00 ***A hybrid tool to combine multi-criterion decision making and economic objective optimization in designing grid connected hybrid energy systems***

Koubaa Zainab (Tunisie & ISGIS, Tunisia); Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia); Ahmed Frikha (Université de Sfax (ISGI), Tunisia & Institut Supérieur de Gestion Industrielle de Sfax, Tunisia)

Currently, the Tunisian energy system relies almost exclusively on fossil resources, but a new paradigm is emerging in the country. With the prevailing power crisis, unreliable and power rationing, the government has become very invested in introducing renewable energy sources into the current power mix as a sustainable means of electrification across the country. The Tunisian program on renewable energy and energy efficiency established the ambitious goal of deriving 30% of electricity production from renewable energy sources (RES) by 2030. However, REs have an inherent stochastic nature, which is their main drawback. To overcome these issues, hybridising renewable energy resources has recently gained attention due to the intermittent nature of some resources. This study addresses the sustainability objectives using a methodology based on concepts of Fuzzy Multi-Criteria Decision-Making (FMCDM) and Mathematical Optimization Programming (MOP) to design a grid connected hybrid renewable energy system. In the first phase, we calculate the criteria weights using Fuzzy AHP based on energy expert opinions. Then, we determine the evaluation of various renewable energy sources through the application of Fuzzy VIKOR method. In the second phase, we solve the design of hybrid renewable energy system using the MOP model conformed with multi-criteria decision making (MCDM) results. To verify the effectiveness, the framework is applied in Tunisia. The results show that the selected hybrid renewable energy system does not only guarantee a reliable system configuration, it also has economic, environmental and social benefits.

15:20 ***Application of Optimal Stopping Theory to Pandemic Lockdown Policies***

Noura El Hassan (Neoma Business School, Lebanon); Bacel Maddah (American University of Beirut, Lebanon); Fouad Ben Abdelaziz (NEOMA Business School, France)

During the COVID-19 pandemic, governments are facing challenges in determining the optimal time to exit the lockdown in their countries. A trade-off between health-related aspects and economic aspects should be achieved. This paper uses a discrete-time Markov Chain (DTMC) SIS model to find the optimal time to stop the lockdown. Two models are proposed: Model 1 assumes that the reproduction number R is constant with time, while Model 2 considers that R is time-dependent. The analysis of Model 1 leads to simple optimal policies.

PS4-1: PS4-1

Chair: Wachira Ponboon (Mae Fah Luang University, Thailand)

14:00 ***Making It Simple? Training Deep Learning Models Toward Simplicity***

Marco Repetto (University of Milan-Bicocca, Italy); Davide La Torre (SKEMA Business School, France)

Deep Learning aims to achieve high performances at the expense of explainability. Explainable Artificial Intelligence consists of all the methods addressing this problem. These methods do not provide interpretability from the start and are valid only as a sanity check after model training. Furthermore, it's unclear when an explanation qualifies as understandable. This paper aims at creating a double backpropagation technique restricting the model's feature effects. The approach ensures interpretable Deep Learning models' explanations during the learning phase. The problem is framed as a Multicriteria one allowing the stakeholders to control the degree of regularization. The result is a Deep Learning model that embodies simple interpretability from the start and aligns with the recent regulations. A series of numerical examples show that our method produces performant yet flexible models that can generalize even when data is scarce.

14:20 ***Federated Multicriteria Learning: A Goal Programming Perspective***

Marco Repetto (University of Milan-Bicocca, Italy); Davide La Torre (SKEMA Business School, France)

Edge computing is increasing in usage both in consumer and industrial applications. However, in many of those applications, the data residing in those devices cannot be shared freely across nodes as it will not comply with recent privacy protection regulations. Federated Learning is a framework addressing this problem. It consists of learning from a decentralized corpus of non-independent and identically distributed data. However, the problem of some recent Federated Learning approaches is that by sharing the gradient, they fail to comply with privacy protection regulations either. A solution to this problem would be to see all the models selected by each node as an ensemble. In this paper, we propose a Goal Programming approach to address this issue.

In particular, we define the federated model as a parallel ensemble in which the weights belong to the solution of a Weighted Goal Programming problem. The proposed approach has the advantage of being model and metric agnostic. Moreover, the proposed approach has the advantage of being privacy compliant, as the nodes receive only the final prediction functions. To test the performance of our approach, we employ a novel dataset, specifically for Federated Learning, the ``Federated Extended MNIST''. From the numerical experiment, it emerges that the federated Convolutional Neural Network performs much better than the Residual Network given the same training periods. Last, the Convolutional Neural Network architecture generalizes more on the edge nodes as the training increase slightly.

14:40 ***Machine learning based integrity decision management of pipeline corrosion clusters***

Abraham Mensah and Srinivas Sriramula (University of Aberdeen, United Kingdom (Great Britain))

Pipeline interacting corrosion defects usually occur in a cluster in such a way that the failure pressure is not controlled by a single defect. These metal loss defects can impair the service life of the pipeline that could lead to loss of containments and potential harm to the environment and facilities. Therefore, pipeline operators use deterministic and probabilistic integrity assessment to examine these corrosion defects to plan inspection, undertake repairs, or replacement of pipeline sections to prevent such incidents. However, the large amount of interacting metal loss defects captured by in-line inspection tools are generally assessed by conservative physics-based formulations, which are mostly centered on the single defect approach to determine the collapse pressures. The need to accurately predict the failure pressure of the large amount of clustered corrosion defects in the pipeline requires a computationally efficient machine learning approach that can accommodate variability of the input data effectively. Hence, for this research, categorical machine learning models are trained, validated, and tested using published experimental collapse pressure of corrosion cluster with the same defect depth for a test sample. The paper presents this approach, where the predicted pipeline failure pressure of the corrosion clusters captured by real in-line inspection are assessed by generated artificial neural networks and non-linear regression models that provides a total mean deviation percent of 2.52% and 9.36% respectively, better than the 17.45% error percent by Det Norkse Veritas approach. This leads to effective decisions by pipeline operators, in reducing pipeline operating and maintenance costs safely.

15:00 ***Towards predicting the decision-maker preferences - MLP-COMET approach***

Bartłomiej Kizielewicz (West Pomeranian University of Technology, Szczecin, Poland)

This paper presents a new approach to defining a COMET model based on evaluations of alternatives. In decisions problems based on expert knowledge, defined models are often unavailable, and evaluating subsequent decision alternatives becomes impossible. The approaches based on stochastic methods used so far can only serve as search functions for the closest possible model definitions. Therefore, the following work proposes a multilayer perceptron for the regression problem as an expert function for the COMET method. The study considers the selection of hyperparameters for the multilayer perceptron structure using the GridSearchCV algorithm. Then, using the obtained results, a new model was defined and compared by statistical measures with the reference model. The high similarity of the obtained model with the reference model indicates this approach as adequate for model definition.

15:20 ***Implementation of ML algorithms based Decision Aid for Smart Grid***

Soufiane El moumni (Hassan II University, Morocco); Abdelhakim Alali (Hassan II University Of Casablanca, Morocco); Mohamed Fettach (Hassan II University, Morocco)

Artificial intelligence (AI), or more precisely "machine learning", gives meaning and value to the immense amounts of data generated, collected and stored by existing measurement devices on electrical networks. Always drawing from the information of current, voltage and power signals, AI is used, for example, to identify different network operating scenarios, to understand usage patterns and load profiles, or to predict potential network operating limit overloads. In order to ensure smart energy management, load signatures provided by appliances can be used to detect which appliance is used. In this paper, we aim to implement five ML algorithms using a low-frequency database to identify appliances. The Discrete Wavelet Transform is also used for features extraction and data dimensionality reduction. The results of these implementations allow fair comparison and decision-making of the best ML algorithm in terms of accuracy to be used effectively in load signatures recognition for smart grid.

PS4-2: PS4-2

Chair: Proychai Klakayan (Mae Fah Luang University, Thailand)

14:00 ***Towards Smart Grids: Fault Detection and Diagnosis-based Artificial Intelligence Techniques in Solar PV plants***

Mohammed ali Jallal (Cadi Ayyad University Faculty of Sciences Semlalia, Morocco); Abdessalam EL yassini (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco); Samira Chabaa (Ibn Zohr & ENSA, Morocco); Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

Solar photovoltaic (PV) power plants' reliability and efficiency are always hot topics. During the operating period as all industrial systems, these plants are susceptible to malfunctions and failures in their equipment or operations. Faults occurrence in solar PV systems' components can significantly impact the efficiency, power generation yield, safety, and stability of the entire PV power plant if not detected and corrected promptly. Furthermore, if any faults persist, they can increase the fire hazard. For these reasons, incorporating a smart diagnostic system is required, where its primary goal is to provide accurate indicators for detecting faults and thus maintain the stability of the solar PV power plants' energy production. Given the importance of this topic, the present literature starts with a description of various faults mechanisms that occur in solar PV power plants before providing a consistent review about fault detection and diagnosis strategies-based artificial intelligence to boost the progress and the transition towards smart grids-based green energies.

14:20 ***Vehicle Location Privacy Protection Mechanism Based on Location and Velocity***

Izdihar S Shaleesh (Tartous University & Syrian Computer Society, Syria); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Akram A. Almohammedi (South Ural State University, Malaysia); Naji Mohammad (Tartous University, United Kingdom (Great Britain))

Vehicular ad hoc networks (VANETs) are necessary to protect the lives of drivers by providing them with important information about the condition of the road. However, this type of network is vulnerable to eavesdropping due to the wireless medium of the spread of Beacons messages, which makes drivers worry about the possibility of being pursued through the network. Thus, protecting the privacy of vehicles is an urgent matter in VANETS environments. In this paper, a privacy protection system based on changing pseudonyms depending on the speed of the vehicle and its location inside or outside the predefined mix-zones is proposed. The simulation results show that the proposed strategy is an effective strategy to protect the location information of vehicle drivers. The proposed strategy outperforms existing strategies in terms of mean number tracker confusion, continuous tracking period, and maximum entropy.

14:40 ***An overview of Automatic Speech Recognition Preprocessing Techniques***

Maria Labied (University Hassan II Casablanca, Morocco); Abdessamad Belangour (Hassan II University, Morocco); Mouad Banane (University of Hassan II, Morocco); Allae Erraissi (Chouaib Doukkali University, El Jadida, Morocco)

Speech signal preprocessing is the first and the most important step in the automatic speech recognition process. The preprocessing of speech consists of cleaning the speech signal from ambient and undesirable noises, detecting speech activity, and normalizing the length of the vocal tract. The objective of preprocessing a speech signal is to make the speech recognition systems computationally more efficient through the application of several preprocessing techniques, such as speech pre-emphasis, vocal tract length normalization, voice activity detection, noise removal, framing, and windowing. This paper gives an overview of the fundamentals of speech signal preprocessing techniques, by highlighting the specifics and the requirements of each technique. We also explore all aspects that can improve the results of each technique. We aim that the content of this paper will help researchers improve the quality of their speech recognition systems by identifying appropriate speech preprocessing techniques to use in their experimental settings.

15:00 ***An Advanced Weighted Evidence Combination Method for Multisensor Data Fusion in IoT***

Nour el imane Hamda (Blida1 University, Algeria); Allel Hadjali (LIAS, ENSMA, France); Mohand Lagha (Blida1 University, Aeronautical Science Laboratory & Institute of Aeronautics and Spatial Studies, Algeria)

Dempster-Shafer theory is an essential tool for modelling and reasoning under uncertainty, and it is an effective approach for multisensor data fusion. It is extensively deployed in many fields such as fault diagnosis, image processing, pattern recognition,

etc. However, Dempster's combination rule is often subject to counter-intuitive results when the sources highly conflict; several methods have been proposed in the literature to solve this problem. In this paper, a weighted evidence combination method based on evidence distance, evidence angle, and information volume is proposed to overcome the shortcomings of the classical Dempster's combination rule. To investigate the effectiveness and performance of the proposed method, a comparative study with different state of the art methods using both benchmark numerical example and Fault diagnosis application has been carried out.

PS4-7: PS4-7

Chair: Suppakarn Chansareewittaya (Mae Fah Luang University, Thailand)

14:00 ***Electric Vehicle Charging Stations and their Impact on the Power Quality of Utility Grid***

Surbhi Pankaj (Aligarh Muslim University, India); Mohd Rizwan Khalid (ALIGARH, India)

Electric Vehicles (EVs) are like any other Internal Combustion (IC) engine vehicle running on the road, but unlike IC engine vehicles they are the main concern for electrical engineers because of their integration with the grid. The environmental benefits of EVs motivate more consumers to adopt EVs which leads to a major rise in the demand for EVs. To meet the rising demand there is a need for considerable EV charging stations. These EV charging stations when connected to the grid, inject harmonic, disturb the voltage and ultimately hamper the power quality (PQ) of the utility. In this paper, the impact of EV charging stations on the PQ of the utility grids is analyzed. The concerns like voltage sag and swell, harmonics, and power demand are observed and a mitigation technique is provided for improving the PQ of the utility.

14:20 ***Edible Packaging Selection Employing Hybrid CRITIC and TOPSIS Method***

Kavitha Reddy Gurrala, Maram Helmy and Malick Ndiaye (American University of Sharjah, United Arab Emirates)

Nations are under constant pressure to reduce the increasing amounts of food packaging waste generated across the world, as the demand and supply patterns for food across the world are expected to tremendously rise with the increasing population levels across the globe. However, the research focus in the domain of food packaging mainly concentrates on the usage of advanced technologies or implementation of atmospheric controls within the packaging, to protect food and prolong the shelf life of the foods to facilitate environmental impact reductions through food waste reductions, with little focus on the development of alternatives such as edible films, that can further facilitate significant reductions within the environmental pollution levels generated from food packaging wastes. Additionally, research concentrating on edible films resulted in the formulation of several biocomposites developed from alternative biopolymers i.e., polysaccharides (glucose derivatives), proteins (animal or vegetable derivatives), etc., exhibiting significant differences corresponding to physical, mechanical, optical, thermal, chemical, and barrier properties, necessitating the application of Multi-Criteria Decision-Making Methods (MCDM) towards the selection of an optimal biocomposite for edible film preparation. Therefore, this study aims at employing a Hybrid MCDM method formulated from CRITIC (Criteria Importance Through Inter- Criteria Correlation) and TOPSIS (Technique by Order Preference by Similarity to Ideal Solution) methods, to facilitate the selection of an optimal green biocomposite sample from a set of film samples exhibiting different properties.

14:40 ***A Review on Power Pad, Topologies and Standards of Wireless Charging of Electric Vehicles***

Bilal Alam (Aligarh Muslim University, India); Aqueel Ahmad (Aligarh Muslim University & Zakir Hussain College of Engineering and Technology, India); Yasser Rafat (Aligarh Muslim University, India); Mohammad Saad Alam (Aligrah Muslim University, India)

The charging mechanism of an electric vehicle functions an important role in the structure of EV. The conventional EVs employ plug-in charging systems while the modern EVs employ either wireless charging systems or a hybrid combination of wired and wireless charging. This paperwork presents a state-of-the-art review of different methods incorporated to transfer power through an air gap (WPT). The wireless charging methodologies and the type of charging system based on the vehicle position while getting charged have been detailed. The components required for WPT followed by different topologies have also been discussed. The detailed enhancement of the topics has been done using diagrams and figures to provide an image of the idea of

the topics being discussed. The requirement, standards, recent trends, challenges for WPT are discussed. Comparative analysis of the characteristics of various compensation topologies has been outlined in tabular form. Through the paper researchers, scholars could grab thorough knowledge on the basics of WPT and its mechanism of working, especially its explicit usage in EVs.

15:00 ***Purchase Decision and Consumer Behaviour for Organic Products***

Monika Chinchkhede and Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

Purpose - This paper aims to acquire information about nature of customers & customer willingness to buy organic products. The purpose of this study report is to identify the reasons behind the attitude of the customer on these products. A face-to-face interview was conducted to gather data, which included a closed-ended questions with a structured questionnaire. Summation of 150 people participated in the poll. Conclusion of the study were analyzed using factor analysis in SPSS. Consumers regard organically cultivated goods as high quality and highly healthy, according to the findings. Such items are seen as problematic appearance and costly. Customers aren't very familiar with the market's supply of organically farmed products. Some customers prefer organic products and they are ready to pay a high price for these products. As a result, natural product marketing tactics should target these individuals. Practical implications - According to the findings of the study, one of the most significant tasks for producers is to raise customer awareness of organic product and how to distinguish it in the market. They might stress organic items' health advantages, natural components, and high quality. Value - The findings of this study might be utilized to plan future marketing operations, since they give important understanding behaviour about these products. And learning the elements which influence them for purchasing these products. Keywords- Ecological awareness, Purchaser behaviour, Purchaser satisfaction, Chemical free products, buying behaviour, natural, healthy

15:20 ***Optimizing ergonomic in manual assembly line balancing problem***

Zainab Tkitek and Hager Triki (Higher Institute of Industrual Management of Sfax, Tunisia)

Nowadays, ergonomics is an important consideration when dealing with manual assembly line balancing problems because of the effects it can have on both productivity and human factor issues. In this case, the human factor has become an essential decision-making component within the company. The design of an assembly line can optimize ergonomic aspects based on the anthropometric and physiological characteristics of the workers. Assembly line balancing (ALB) allocates individual tasks to work stations while respecting the physical, safety and quality constraints. The fundamental ALB problem is the way of getting an optimal assignment of tasks to the stations respecting well-determined constraints and reaching certain objectives. This problem is often an active research area. In this paper, a new manual ALBP model is proposed. The contribution of this paper is based on the assignment of assembly tasks to workstations while taking into account a set of human operators that are actually available in a firm. Workers are assigned based on anthropometric and physiological characteristics such as arm measurement The arm spam measurement will be considered in the proposed model like the length of the workstation for the operator executes the work task comfortably. The objective of the problem is the minimization of the number of workstations to reduce the length of the novel line designed. An illustrated example randomly generated is finally tested with LINGO software and discussed.

PS4-8: PS4-8

Chair: Pornpimol Chaisanit Chaisanit (Mae Fah Luang University, Thailand)

14:00 ***Implementation of Education 4.0 as Sustainable Decisions for a Sustainable Development***

Yulia Samiha and Tutut Handayani (Universitas Islam Negeri Raden Fatah Palembang, Indonesia); Abdur Razzaq (Universitas Islam Negeri Raden Fatah, Indonesia); Mia Fithriyah (Indonesia Open University, Indonesia); Annisa Fitri (An Nashr Institute, Indonesia); Muhammad Anshari (Universiti Brunei Darussalam, Brunei Darussalam)

Excellent concept of sustainable development is an essential factor in addressing the world's rising unemployment rate. Many researchers believe that Industry 4.0 will increase unemployment besides replacing old jobs with automated machines such as robots, while others think it will decrease underemployment by creating new employment opportunities. To prepare the millennial

generation for the possible ramifications of Industry 4.0, Education 4.0 should be introduced. The purpose of this report is to examine the potential causes of youth unemployment in the age of Industry 4.0, to determine preventive measures or steps that can be taken, particularly by the educational system, to reduce the unemployment rate. According to root cause analysis (RCA), the problem might be caused by the lack of understanding of the keys of Education 4.0.

14:20 ***Post Covid-19 Strategy Through Supporting Teacher Digital Literacy as the Sustainable Decision to Enhance Education System: Indonesia Case Study***

Indah Wigati (Universitas Islam Negeri Raden Fatah, Indonesia); Mia Fithriyah (Indonesia Open University, Indonesia)

Digital literacy has become a major concern for the world of education including students, teachers, and policy makers. Awareness of mastery of digital literacy is very necessary for educators in the learning process. This study aims to analyze the awareness of the use of teacher digital literacy in the learning process after the Covid-19 pandemic. This study employs a quantitative descriptive method to describe the form of teacher digital literacy awareness, supporting factors in the use of digital literacy and the implications of awareness of using digital literacy teachers after the Covid 19 pandemic. This research was conducted at Islamic Public Senior High School (MAN) in Palembang City, South Sumatra. The results showed the form of mastery of digital literacy of teachers was high in the ability to utilize technology (100%). The most influential supporting factor correctly is the motivation of friends (97.90%). The implication of using digital literacy for teachers is the execution of virtual meeting learning (94%). The logical conclusion of this study is that teachers develop awareness in utilizing technology, and it is more effortless to convey material after the Covid-19 pandemic. Mastery of digital literacy for teachers needs to be carefully reviewed to the stage of performance and application to students.

14:40 ***Assessing Temporal-based Parking Pricing Schemes***

Elmer R Magsino, Gerald P. Arada and Catherine Manuela Lee Ramos (De La Salle University, Philippines)

As more vehicles roam the urban roads, the necessity of availing a parking space to park the vehicle during down time becomes imminent. However, due to the heterogeneity of these parking locations, different commercial establishments collect varying car park fees from their customers. As parkers, they search for available lots that provide value for their money. In this study, we evaluate two existing temporal-based parking pricing schemes, namely, Fixed and Linear Rate Pricing, based on their effective value. We introduce a new pricing scheme, Min-Max Rate Pricing, to provide balance between the low and high effective values of the Fixed and Linear Rate, respectively. Our investigation shows that for shorter parking duration, the rates of all schemes are approximately equal, while for longer duration, Linear Rate is the most expensive of all schemes and the proposed Min-Max Pricing rate provides an intermediate price value for parkers.

15:00 ***The Role of Community Managers in Digitizing Small Businesses***

Shahrul Azmi Mohd Yusof, Nor Idayu Mahat and Jauriyah Shamsuddin (Universiti Utara Malaysia, Malaysia); Roshidi Din (Universiti Utara Malaysia & School of Computing, Malaysia); Ayoib Che-Ahmad (Universiti Utara Malaysia, Malaysia)

Asnaf is a person that is eligible to receive zakat, a form of almsgiving collected from Muslims. Asnaf i-Care is a business and income management website designed to help qualified Asnafs who are computer-illiterate do online business. It uses the idea of a community manager to help asnaf merchants conduct online business by marketing their products online. This idea was introduced to assist in digitizing merchants' conventional business. The Community Manager takes care of the overall e-commerce website management and manages marketing through social media and orders. The overall design of Asnaf I-Care includes Phase 1, developing an e-commerce system for Asnaf products; Phase 2, monitoring the income of Asnaf entrepreneurs; and Phase 3, distributing Asnaf goods. In addition, this paper covers phase 1, the purchasing system. Feedback was compiled from 37 asnaf merchants operating small and micro enterprises and 43 university students. The questionnaire was divided into four parts: merchants' readiness to transition to e-commerce business with community managers, acceptance of the concept of Asnaf i-Care and community managers, pricing in Asnaf i-Care application, and merchants' suggestions and comments to improve Asnaf i-Care application. Overall, almost all Asnaf merchants agree with community managers' concept of helping them implement their online businesses. However, the percentage of agreement is slightly lower among students than among merchants. In conclusion, Asnaf dealers can adopt the concept of community business well with the help of community managers, especially those whose business is negatively affected by the situation COVID -19.

15:20 ***Machine Learning Based Model To Assess the Impact of Rapid Urbanization on Land Surface Temperature***

Tasneem Ahmed (Integral University Lucknow, India); Saurabh Srivastava (Integral University, India)

Satellite images are a powerful tool for earth surface monitoring and are freely available for interpretation and analysis of earth surface monitoring like Landsat series and Sentinel 2. The earth observation techniques are frequently used in various areas of earth surface monitoring including urban planning, vegetation monitoring, administration in charge of territorial planning, etc. The advancement in satellite imaginary techniques offers a promising framework for monitoring land changes in urban areas. The urban heat is responsible for higher temperature values of urban areas as compared to their surroundings. The land surface temperature is an important parameter for many scientific areas, it affects the relationship between the land surface and the atmosphere. In this study, the last five years' Sentinel 2 and Landsat 8 images of the summer season have been used to monitor the urban area and land surface temperature to establish the correlation between urban area and land surface temperature for finding the impact of rapid urbanization at land surface temperature. In future, urban area monitoring will be helpful to the decision makers for preparing the urban area plan and resource management

Thursday, March 24 15:40 - 16:00 (Asia/Bangkok)

Break: Coffee Break

Thursday, March 24 16:00 - 16:30 (Asia/Bangkok)

INFORMS BH: INFORMS BH

Chair: Hatem Masri (University of Bahrain & University of Sousse, Bahrain)

Thursday, March 24 16:30 - 17:15 (Asia/Bangkok)

SP2-1: Semi-Plenary 2-1

Chair: Abdulla Alqaddoumi (University of Bahrain, Bahrain)

How machine learning can help metaheuristics?

SP2-2: Semi-Plenary 2-2

Chair: Sawsan Hilal (University of Bahrain, Bahrain)

Deep Learning and Multiple Criteria Optimization: New Results and Applications

Friday, March 25 8:00 - 8:30 (Asia/Bangkok)

ATK+REG: ATK Testing and Registration

Friday, March 25 8:30 - 10:10 (Asia/Bangkok)

PS5-1: PS5-1

Chair: Nacha Chondamrongkul (Mae Fah Luang University, Thailand)

8:30 ***A Comparative Study of Machine Learning Algorithms for Predicting Weight Range of Neonate***

Saleem Adeeba and Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Senthan Prasanth (Physical Sciences and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Sri Lanka)

Birth weight is a crucial measure of pregnancy outcome, and it indicates a neonate's chances of longevity, growth, long-lived health, and mental development. In epidemiological studies, it is commonly regarded as the causative pathway to these health consequences. Scanning the fetus's weight before birth is associated with difficulties and is typically calculated using empirical calculations based on doctors' clinical experience. In this research, the authors proposed an approach to predict the neonate weight class with minimum errors and costs during six months of pregnancy, utilizing existing pregnant women's data. Authors recognized 16 attributes after an extreme literature survey and expert opinions. The hemoglobin level of the mother, mother's pre-pregnancy weight and height, pregnant woman's weight each month until 6 are some attributes identified. For the Machine learning (ML) models to work, a dataset of 1000 pregnant women was obtained and preprocessed. Then dataset was prepared to apply ML models. This research uses eight different ML algorithms to predict the neonate weight class at six months of pregnancy. Also, this research provides an approach to compare different eight ML models to find an effective algorithm for the neonate weight prediction. The Linear Discriminant Analysis (LDA) model has higher performance than other models. Accuracy, precision, recall and F1-score for LDA are 81.94 %, 83.05%, 94.23% and 88.28 % respectively.

8:50 ***Dry and Wet Cough Detection using Fusion of Cepstral base Statistical Features***

Shweta Pande, Anup Patil and Sharmila Petkar (University of Mumbai, India)

Nowadays with technological advancements, machine learning is widely used in the healthcare sector to help patients and doctors. Machine learning offers various tools for healthcare to diagnose various diseases in an effective manner. In clinical diagnosis, machine learning is used to analyse the audio recording of coughs in order to detect respiratory illness. To clear lung and throat from any foreign substance, the human body's inundate mechanism create a substance called Cough. Audio recordings of coughs consist of patterns and depending on the pattern, cough can be classified as wet cough and dry cough. The COUGHVID dataset consists of more than 20,000 audio recordings of cough which includes a wide range of subjects such as gender, ages, geographic locations, from which more than 2000 recordings are labelled by medical experts to diagnose abnormalities present in cough. In this paper, a fusion of different cepstral based statistical features and classification using machine learning algorithms is presented. After analysis, it is observed that through ADASYN oversampling highest accuracy of 85.84%, f1 score of 86.80% and the area under the curve as 0.857 is achieved for the MLP model.

9:10 ***Students' health problems and behavior in online learning decision during COVID-19 epidemic***

Pitchakorn Khumya, Sakunrat Phadungpak, Rungtiwa Khanbut, Waritsara Rattanasattakul and Tosporn Arreeras (Mae Fah Luang University, Thailand)

Online learning plays an increasingly important role in education. At the same time, the COVID-19 pandemic made institutions shift classroom learning to online learning. Online learning causes various problems that affect students' physical and mental health problems. They needed to be confined indoors and sitting in front of electronic devices resulting in stress, depression, or fatigue. Certainly, COVID-19 was a considerable threat to students' health, so it caused students to suffer significant physical and mental health problems. Therefore, this research aims to study the impact of the study during the outbreak and examine

the impact of physical and mental health problems. This research was designed as quantitative data collected using online questionnaires from 450 students aged 15-26 using exploratory factor analysis were conducted to identify factors for the impact of health problems during online learning among Thai students during COVID-19. It also helps to improve student learning efficiency and for the benefit of teachers in adapting teaching and learning to the situation and avoiding potential future health risks.

9:30 ***Chemical Named Entity Recognition for Ovarian Cancer's Drug Discovery***

Vijayshri Nitin Khedkar (Symbiosis Institute of Technology, Symbiosis International, Lavale, Pune, India); Sonali Kothari (Symbiosis International Deemed University, India); Mansi R, Devshi Desai and Charlotte Fernandes (Symbiosis Institute of Technology, India)

Biomedical text mining, which is utilized for extracting valued information from biomedical papers, named entity recognition is a critical task. Drug NER is a crucial step in advanced biomedical NLP applications including pharmacodynamics, pharmacokinetics, and pharmacogenomics parameter abstraction. The number of scientific papers is continually increasing, allowing to expand understanding of health, clinical, and biological sciences. Because the acquired findings are not currently archived automatically, most of this information is concealed in the textual contents, making it unreachable for later use or study. Because the amount of time and effort necessary to extract critical information from such a large number of articles is so great, no pre-existing dataset devoted specifically to ovarian cancer has been discovered. As a result, the proposed research created a dataset from scratch to train the suggested model. Proposed research discussed method to drug development in Ovarian cancer using Chemical Named Entity Recognition in this publication. Results: BiLSTM which stands for Bi-directional long short-term memory along with CRF, proposed research present a Named Entity Recognition system for chemical entities. On the basis of the dataset proposed research created, the proposed research evaluates the model. For CNER, the model achieved an F1-score of 0.91 on this dataset. Proposed research finds that the technique performs admirably for biomedical NER problems. Conclusion: The suggested method is effective in recognizing chemical entities in ovarian cancer-related literature..

9:50 ***Early Stroke Prediction Using Machine Learning***

Chetan Sharma (Chitkara University Himachal Pradesh, India); Shamneesh Sharma (UpGrad Education Pvt Ltd, India & UpGrad Campus, India); Mukesh Kumar (Lovely Professional University, India); Ankur Sodhi (upGrad Education Private Limited, India)

Stroke is one of the most severe diseases globally, and it is directly or indirectly responsible for a considerable number of deaths. A variety of data mining techniques are employed in the health care industry to aid in diagnosing and early detection of illnesses. Several elements that lead to stroke are considered in the current investigation. First, we're looking into the characteristics of those who are more likely to suffer from a stroke than others. The dataset is obtained from a freely available source, and multiple classification algorithms are used to predict the occurrence of a stroke shortly. By employing the random forest algorithm, it has been possible to obtain an accuracy of 98.94 percent. Finally, various preventative steps such as quitting smoking, avoiding alcohol, and other factors are recommended to reduce the risk of having a stroke.

PS5-5: PS5-5

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

8:30 ***ProdRev: A DNN framework for empowering customers using generative pre-trained transformers***

Aakash Gupta (& Think Evolve Consultancy LLP, India); Nataraj Das (NIT Agartala, India)

Following the pandemic, customers, preference for using e-commerce has accelerated. Since much information is available in multiple reviews (sometimes running in thousands) for a single product, it can create decision paralysis for the buyer. This scenario disempowers the consumer, who cannot be expected to go over so many reviews since its time consuming and can confuse them. Various commercial tools are available, that use a scoring mechanism to arrive at an adjusted score. It can alert the user to potential review manipulations. This paper proposes a framework that fine-tunes a generative pre-trained transformer to understand these reviews better. Furthermore, using "common-sense" to make better decisions. These models have more than 13 billion parameters. To fine-tune the model for our requirement, we use the curie engine from GPT3. By using generative

models, we are introducing abstractive summarization. Instead of using a simple extractive method of summarizing the reviews. This brings out the true relationship between the reviews and not simply copy-paste. This introduces an element of "common sense" for the user and helps them to quickly make the right decisions. The user is provided the pros and cons of the processed reviews. Thus the user/customer can take their own decisions.

8:50 ***Role of ICT & Fintech in Indian Agriculture***

Ameya More (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

In emerging economies and rural areas, weak technological infrastructure, high costs of technology, low levels of e-literacy and digital skills, weak regulatory framework and limited access to services are the primary challenges in the digitalization process of Agriculture. As a result, the usage of Internet of Things (IoT), data analytics (DA) and Fintech are employed to enhance the operational efficiency and productivity within the agriculture sector. The IoT existing technologies integrate radio frequency identification, cloud computing, middleware systems, and end-consumer applications for future developments. Big data, IOT and Fintech are important technologies used for good sized statistics and assist agricultural practitioners to recognize well farming practices and take specific decisions. The important aim is to focus on Fintech and IoT in agriculture which features records of creation strategies, accessibility of era, accessibility of gadgets and software gear. As there are many farmers who witness demanding situations to get access to the marketplace, credit, quality farm inputs to improve their crop yield. So, the access to digital technology provides significant benefits to smallholder farmers and different rural businesses to tap into workforce talent, build strategic partnership, access support services which include training, finance and legal services and, critically, reach markets and customers.

9:10 ***Literature Review: Blockchain-Oriented Software Characteristics and New Stream for Software Process Improvement***

Ammar AL-Ashmori (Universiti Teknologi PETRONAS & Yemen, Malaysia); Dhanapal Durai Dominic (Universiti Teknologi PETRONAS, Malaysia); Shuib Basri (Universiti Teknologi Petronas, Malaysia); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Gehad Mohammed Ahmed Naji (Universiti Teknologi PETRONAS (UTP), Malaysia)

Software process improvement has been through many discussions in the past few decades with relation to the software development changes. Blockchain-oriented software has been getting more popular, and many recent researchers discussed the suitability of traditional software engineering for this new type of software. However, the suitability of the current SPI for blockchain-oriented software has not been discussed yet. This paper aims to define the Blockchain-oriented Software characteristics that differentiate it from the traditional software. A literature search was performed considering the studies published up to the date on IEEE Explore, Springer, ACM, ScienceDirect, ProQuest, Web of Science, and emerald insight. A total of 103 studies were found, and only 49 relevant studies met the inclusion criteria. A thematic analysis was performed with an inductive approach to identify 46 distinctive Blockchain-oriented Software characteristics. This result shows the necessity for researchers to devise specific SPI to develop blockchain-oriented software to address its distinctive characteristics, which affect its development and projects. Finally, a new stream for SPI is recommended here to cover Blockchain-oriented Software Process Improvement.

9:30 ***ShielDroid: A Hybrid Approach Integrating Machine and Deep Learning for Android Malware Detection***

Md Faisal Ahmed, Zarin Tasnim Biash, Abu Raihan Shakil, Ahmed Ryen, Arman Hossain, Faisal Bin Ashraf and Muhammad Iqbal Hossain (Brac University, Bangladesh)

Due to the rapid development of the advanced world of technology, there is a high increase in devices such as smartphones and tablets, which increase the number of applications used. Though an application has to pass the malware detection test before appearing in the play store, many applications successfully get trusted and accepted even though they contain malicious software variants that are challenging to detect. The application requires physical execution to see these malicious contents, which get undetected during the first screening test. Due to the physical implementation of the application, it may be too late to undo the malware's damage. In this work, the usage of real-time Android malware detection analyzing Android applications to detect and swiftly distinguish complex malware has been discussed. This work focuses on the use of dynamic algorithms

implemented by hybrid detection techniques of Android malware. After filtrating the collected dataset, the process of separation between harmful and benign apps is discussed. Then summarization and evaluation of the various techniques and classification algorithms employed have been discussed, identifying the best-suited method that gives the most accurate result in a minimum amount of time. The best way to reach the target is a hybrid Random Forest, and Multilayer perceptron network, where the overall accuracy achieved was 97.5% with an execution time of 22.945 seconds. The application of this work may allow the users to protect their devices from cyber-attacks by detecting malicious software variants in mobile applications

9:50 ***Extreme Event Detection and Management using Twitter Data Analysis***

Girish K K (Providence College of Engineering, Chengannur, India); Jeni Moni (Providence College of Engineering Chengannur, India); Joel Roy, Afreed P, S Harikrishnan and Gokul Kumar (Providence College of Engineering, Chengannur, India)

Events like the natural disasters are impossible to predict and are inevitable. The best course of action in that scenario is to effectively detect the event and respond to it accordingly. With quick detection and tangible information retrieval, casualties can be greatly reduced. Traditionally, this has been a tiring task as the data was siphoned from human observers or expensive equipment. In countries with scarce economies, the acquisition of these equipment can prove herculean and relying on individual human observers may lead to the spread of misinformation. An inexpensive and reliable solution to this problem can be found in the form of a system which facilitates the detection of extreme real-world events through the reactions of people on online social networks like Twitter. Unusual bursts in traffic from Twitter can be detected and this can be associated with an event. Moreover, the system can monitor the Twittersphere for rescue requests that appear on Twitter at the aftermath of an extreme event. Thanks to the containerized designed and hence its scalability, this model can undergo worldwide deployment with ease.

PS5-4: PS5-4

Chair: Karthik Sekaran (Saveetha Engineering College, India)

8:30 ***Effects of role ambiguity on work stress with Islamic coping as mediation among nurses during a Covid-19 pandemic at the General Hospital in Aceh-Indonesia***

Suwardi Suwardi, Said Musnadi and M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia)

The nursing work environment has changed during the Covid-19 pandemic and has impacted work stress among nurses in addition to other stressors including role ambiguity. Nurses with good stress coping can mitigate environmental stressors to minimize the work stress to the lowest level. This study aims to determine the direct effect of role ambiguity and Islamic coping on work stress and the indirect effect of role ambiguity on work stress through Islamic coping among nurses who are working at the General Hospital dr. Zainoel Abidin (Rumah Sakit Umum dr. Zainoel Abidin - RSUDZA), Banda Aceh, Indonesia. A number of 206 nurses who worked in inpatient rooms at the hospital were selected as the sample of study using a stratified random sampling method. The primary data were collected using the questionnaires in the form of a Likert scale and analyzed using a Structural Equation Modeling (SEM) approach. The study found that role ambiguity and Islamic coping have a direct positive and negative influence on work stress. In addition, role ambiguity also has an indirect effect on work stress through Islamic coping. These results have implications for reducing work stress experienced by nurses during the Covid-19 pandemic through the clarification of the roles and responsibilities and improvement of Islamic coping skills of nurses during the Covid-19 pandemic.

8:50 ***Managing performance through technology in times of global crisis***

Sunaina Chetan Kuknor (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, India); Bhuvanesh Kumar Sharma (Symbiosis International University, Pune & Symbiosis Institute of Business Management Pune India, India); Phanindra Siddamsetty (Symbiosis Institute of Business Management, Pune, India)

With the Covid-19 situation globally, the world has become more virtual than physical. Embracing this change to the benefit of organizations is the need of the hour. The present paper examines how the human resources function has transformed during the pandemic, specifically relating to the Performance Management Systems (PMS). The study conducted by interviewing 20

HR professionals from IT industry in India through semi structured questionnaire. The study results indicate that adopting human resource information system (HRIS) as an important tool for capturing and managing employee performance highlighting an organization's progressive approach to adapt to digital space. In the present pandemic situation, HRIS tool has several benefits that managers can adopt to reduce uncertainty and adopt an advanced approach for employee upliftment. Based on the results, managerial and theoretical implications are discussed in the study.

9:10 ***Interpreting the factors of Employee Attrition using Explainable AI***

Karthik Sekaran (Saveetha Engineering College, India); Shanmugam S (Anna University & Saveetha Engineering College, Chennai, India)

Employee attrition is a great challenge for every organization. The growth of any organization directly depends on talented employees. Each employee is considered as a resource, trained over years on crucial skills, builds dependency over critical positions in an organization. There exists several reasons behind the decision made by the employee. It is the responsibility of the organization to identify the attrition of employees as it creates many implications for the processes. Retention of the employee, in turn, reduces the burden of hiring new candidates, increases stability, reduces wasting time on training, etc. To address this key challenge, a sophisticated interpretation model is employed to trace out the reason for attrition. This paper demonstrates the efficacy of two powerful Explainable AI (XAI) models named Local Interpretable Model-Agnostic Explainer (LIME) and Shapley Additive Explainer (SHAP) on interpreting the factors deciding employee attrition. These models unveiled logical insights from the data that could assist the management authorities in countermeasure the risk of employee attrition.

9:30 ***Impact of Human Resource Practices on Individual and Organization Growth***

Chetan Sharma (Chitkara University Himachal Pradesh, India); Shoeb Ahmad (Fahad Bin Sultan University, KSA, Saudi Arabia); Sandeep Singh (Shoolini University, India)

The current decade is transferring an organization's approach towards globalization, and this approach is escalating the competition spirits among them. Human resource management is becoming more critical and complex these days due to the competitive nature of organizations. Organizational growth is not contingent on the policies they specify in daily practice; instead, it is contingent on the personnel for which policies are created and related to human resources. Human resource is the key role player for handling all the activities like recruitment, training, rewards, etc., associated with the workforce. This study focused on finding the various practices which impact employee personal and organizational growth. This study survey is conducted using the questionnaire circulated to education sector people, and there are 280 respondents whose responses have been considered to experiment. The author concluded that human resource practices and policies influence employee performance, both directly and indirectly, through different hypotheses. Performance, rewards, and skills-like elements are investigated, and the results are presented.

9:50 ***A Decision Model For Using Gamification Technology In Employee Training***

Fatima Vapiwala (Symbiosis Institute of Business Management, Pune & Symbiosis International(Deemed University), Pune, India); Deepika Pandita (Symbiosis Institute of Business Management Pune, Symbiosis International (Deemed) University, Pune, India)

The objective of this study is to highlight the various challenges faced by the banking sector, especially after the pandemic as the pace of technological adoption majorly transformed in the training domain. This paper focuses on the revelation of the skills and capabilities required by the Indian banks in line with recent trends and addresses the need for using gamification technology to bridge the skill gap of the employees. For this study, primary data is collected using the structured interview process. 100 respondents were selected comprising of bank managers from private and public sector banks in India who have already utilized gamification technology for their employee training and development. The study has been conducted in the context of the Indian banking sector. The authors have given relevant recommendations based on the responses and findings that can aid the Indian bank managers in making a wise decision regarding the suitability of gamification technology for training their employees.

PS5-2: PS5-2

Chair: Kowit Nambunmee (Mae Fah Luang University, Thailand)

8:30 ***The use of social media by entrepreneurial and small firms: systematic literature review***

Pantas H. Silaban (University of HKBP Nommensen, Indonesia); Wen-Kuo Chen and Andri Dayarana K. Silalahi (Chaoyang University of Technology, Taiwan)

Entrepreneurs and small business owners are converting their services into the current era of social media development to keep up with changes in modern styles by using social media as the primary channel for marketing, sales, and advertising. Entrepreneurs and small businesses must also be able to adapt and gain a competitive edge in today's highly competitive business environment. The purpose of this study is to review the literature on the use of social media by entrepreneurs and small business owners in the Small and Medium-Sized Enterprises (SMEs) sector. As a result of the systematic literature review conducted through the study, entrepreneurs and small businesses will gain a competitive advantage by using social media effectively. Entrepreneurs with a high level of self-efficacy are likely to use social media effectively. As a result of this study, we found that increasing company value, supporting social entrepreneurship, and implementing social change programs are all effective ways to promote corporate social responsibility.

8:50 ***Competitive Landscape of IT Industry in the 5G ecosystem: A Management decision case study of Amdocs***

Anik Baidya and Giri Gundu Hallur (Symbiosis International Deemed University, India)

The upcoming 5G technology launch will have a deep impact on the IT service providers and OSS-BSS industry. The needed changes in OSS/BSS in order to support 5G services are being studied by industry consortia and researchers and new reference architectures and best practices as the IT industry gears up support 5G. Further, emerging trends of widespread adoption of Software Defined Networking/Network Function Virtualisation, Robotic Process Automation, Business intelligence (BI) and artificial intelligence (AI) and machine learning (ML) will serve as key drivers for major changes in the operations support system / business support system (OSS/BSS) architectures. The OSS/BSS domain is expected to adopt key technology innovations such as shared reference model for business process management, standardised information flow across APIs, comprehensive service management, efficient and agile network orchestration for supporting network slicing and building up to the OSS architecture in modules. Thus, the IT industry and OSS/BSS domain in particular is slated to play a key role in roll-out of 5G. The research paper highlights on the leading IT service providers comparative analysis and the decisions that management of Amdocs needs to take to compete with them and to sustain in the existing market competition.

9:10 ***Economic and Technical Implications of Implementation of OpenRAN by "RAKUTEN MOBILE"***

Ashwin U and Giri Gundu Hallur (Symbiosis International Deemed University, India)

Rakuten Mobile is a new challenger telecom operator in Japan competing with NTT DoCoMo, KDDI's au, and SoftBank. Tareq Amin, Rakuten's CTO, has marketed the company's network technology approach to the mobile industries around the world. It has focused on developing a cutting-edge new network architecture with an unusual mix of vendors. Unlike other networks, the company aims to leverage virtualization and containerization extensively throughout its network topology. Rakuten recently joined O-RAN Alliance, a telco community that promotes Open Radio Access Network. The parameters of the Open RAN includes disaggregation of RAN hardware and software on vendor-neutral, multiple architecture options- integrated RAN with disaggregation at Software and Hardware level or a split RAN with Regional Unit(RU) and Baseband Unit (BBU), solutions carried out either on Virtual machine or containerized platform, implementation of Open interface between the nodes, Open RAN compatibility with 2G,3G,4G and 5G deployments, and innovation through adaptation of technologies such as Artificial Intelligence, Machine learning or IoT. This research paper talks about how Rakuten telecommunication successfully implemented the mentioned tenets of the Open RAN technology, becoming the world's first in deploying the open, virtualized radio access network.

9:30 ***Confirmatory Factor Analysis of Enterprise Architecture for Higher Education Institutions***

Chanin Tungpantong (King Mongkut's University of Technology North Bangkok, Thailand); Prachyanun Nilsook (Faculty of Industrial Education, Thailand); Panita Wannapiroon (King Mongkut's University of Technology North Bangkok, Thailand)

This research aims to apply confirmatory factor analysis to identify the enterprise architecture components for higher education institutions. The research sample comprised 300 personnel from agencies within higher education institutions, which are higher education institutions under the Ministry of Higher Education, Science, Research and Innovation that use the database system of

educational quality assurance called Commission on Higher Education Quality Assessment online system (CHE QA Online). The selection resulted from multi-stage random sampling from 100 higher education instructions. The research tool was an online questionnaire form on factors influencing the enterprise architecture in the digital transformation for higher education institutions by 5-level rating scale based on the Likert's scale. The result revealed that the enterprise architecture factor is consistent with empirical data (p-value = 0.370), which comprise 5 components: 1) Business 2) Data/Information 3) Application 4) Infrastructure and 5) Security. The research findings help higher education institutions design their blueprint for the institutional transformation to a digital organization.

9:50 ***Using Data Analytics to Assess Factors Affecting the Survival Rate of Young Urban Trees***

Samah Senbel (Sacred Heart University, USA); Carly Seigel (Weston High School, USA); Thomas Corell (Town of Fairfield, Connecticut, USA); Mary Hogue (Town of Fairfiled, Connecticut, USA)

Urban trees play an important role in cities big and small, both for aesthetics and carbon dioxide sequestration. Therefore, many cities and towns have a community tree planting initiative. The Town of Fairfield, Connecticut, USA has been running a community tree-planting and monitoring project for 6 years. The program plants young trees in the public right-of way adjacent to private homes for a reduced fee. There is a 94% success rate for the trees planted. At the request of the town's forestry committee, we collected and cleaned the planting data as well as the annual evaluations data for over 700 trees. The cleaned dataset was analyzed for feature importance using the Python coding language. We experimented with three feature importance techniques: CORR, RF, and XGB. We showed that the following factors had a strong effect on the trees' success rate: tree diameter at planting, tree species, irrigation method, and to a lesser extent, the tree supplier. Also, interestingly, the denser urban parts of the town had relatively higher success rates.

PS5-3: PS5-3

Chair: Pornwasin Sirisawat (Mae Fah Luang University, Thailand)

8:30 ***COVID-19 pandemic affected on coffee beverage decision and consumers' behavior***

Akedanai Thubsang, Chanu Thiwongwiang, Chuleeporn Wisetdee, Jutamanee Chompoonuch, Maesaya Anson, Sairin Phalamat and Tosporn Arreeras (Mae Fah Luang University, Thailand)

The objective research was to study the transformation of the coffee consumption behavior of coffee drinkers and factors affecting the coffee consumption behavior before and during the COVID-19 pandemic. Because coffee is a famous beverage among university student groups. Therefore, we want to know the coffee consumption behavior and aspects of coffee drinkers such as the time most people need to consume coffee, the price, and the amount of coffee consumed each day. Both before and during the COVID-19 pandemic. To benefit those who are interested in studying coffee and as a guide for decision making in the business development of coffee shop operators. The sample used in this study is 400 students at the University of Thailand who consume coffee. The questionnaire was used to collect data for surveys of coffee consumption behavior. The study results revealed that consumer behavior has changed in coffee drinking patterns, health effects, and budgets for coffee purchases have decreased. Including the amount of coffee consumed on average per day by consumers, slightly increased from before the COVID-19 pandemic.

8:50 ***Selection of Sustainable Energy Alternatives from Indian Context***

Harsh Bipinchandra Sheth and Maharshi Jayeshkumar Bhavsar (University of Regina, Canada); Golam Kabir (Industrial Systems Engineering University of Regina, Canada)

The next biggest crisis any nation can encounter could be energy deficiency and relying upon conventional power generation techniques. For this, the aim of this study is to prioritize India's sustainable energy solutions considering by various factors like ecological, technological, economic, social, adaptable, and legislative. To determine the weight of these factors, the Fuzzy analytic hierarchy process (AHP) is utilized while the Fuzzy TOPSIS method was used to evaluate the rank of the proposed sustainable energies. The result indicates that the technological and economic factors are the most critical factors and solar energy and wind energy are the most sustainable energy solutions for India. The results of this study can be utilized by the Government of India as well as other nations to evaluate the energy sector including sustainable energy.

9:10 ***New Basic Break-even Analysis Models for Multiple Product Firms***

Kariya Ngamsomsuke (Mae Fah Luang University & School of Management, Thailand); Kamol Ngamsomsuke (Thailand); Wangchuk Rabten (School of Management, Mae Fah Luang University, Thailand)

This paper aims at proposing a new basic model for the computation of break-even points for multiple product firms. The key and new component of the newly proposed break-even models was an equivalent unit conversion factor. We have demonstrated that this new computational method of break-even point for multiple product firms provided a unique break-even solution for any product chosen as a based product on both the basic model. Their unique solutions indicate that the newly proposed break-even models are robust. We also demonstrated that the newly proposed break-even model gives us the true break-even for any combination of the products or sales mix, assumed constant in the traditional basic break-even model. These newly proposed break-even models are thus applicable in the actual operation of the multiple product firm with a basic cost structure

9:30 ***Decision Making For A Proposed Traffic Management Solution With The Application Of IOT Technology***

Tanvi Gupta (Symbiosis Institute of Digital & Telecom Management (SIDTM), Pune Mulshi Road, India); Madhavi Damle (Symbiosis International University (SIU), India)

The Internet, a widely popular term, can be referred to as a communication network that connects people from different geographies to all types of information. In contrast, the Internet of Things (IoT) is a network of physical devices that may be uniquely addressed and identified with varying levels of sensing, storing and actuation potential that have the ability to interact by sharing information using the Internet as their common platform or as a backbone. The Internet of Things (IoT) is a promising and exciting new technology for making our cities innovative and responsive to the requirements of the ever-growing population. Effective traffic management is one such application. It is a highly critical technology for improving the overall infrastructure of a city. This could include various features such as monitoring the parking spots in the towns, monitoring vibrations and material states of layovers, overpasses, and premises, installing sound sensing and monitoring devices in different areas of cities like schools and hospitals and monitoring traffic levels. Even though there has been substantial growth in traffic management systems over the past few years, intelligent traffic monitoring remains a hot topic due to emerging technologies such as the Internet of Things (IoT). When it comes to identifying the best possible route and the exact levels of traffic congestion, Maps by Google is now the most popular destination. It does not appear to be a solution to traffic congestion by only a look around. To handle traffic congestion more effectively, we'll need a more complex and intelligent system.

9:50 ***Evolving Journey of Chatbots: Insights into Business Decisions and Management Applications***

Kunal Chhabria (Symbiosis International University & Symbiosis Institute of Digital and Telecom Management, India); Madhavi Damle (Symbiosis International University (SIU), India)

Rapid digitization, as well as the emergence of the internet and mobile devices, has altered how individuals connect with one another and with businesses. Chatbots are specially designed and developed computer programs that interact with humans by simulating a conversation. Chatbots engage with their human partners using a variety of frameworks, ranging from a simple text interface to speech recognition capabilities. Conversational Agents are an evolved version of chatbots, where we use Natural Language Processing (NLP) to make the interaction between the bot and humans much more realistic and simpler. Business organizations are paying close attention to these 'virtual assistants' since they have the ability to improve customer service and even decrease expenses in customer service centres by automating and handling several clients simultaneously. We have discussed the historical backdrop of chatbots, as well as the background for chatbots and conversational agents, two types of dialogue systems, in this paper, and create a timeline to better comprehend their advancement. Next, we will find out how small and medium-sized businesses can reap the benefits of AI Chatbots, by looking at various ways that chatbots can add value to businesses. Finally, we will investigate how companies use Chatbots for conversational marketing.

PS5-6: PS5-6

Chair: Phasuk Nithibandanseree (Mae Fah Luang University, Thailand)

8:30 ***The Effect of Perceived Ease of Use, Perceived Usefulness & Quality of Information on Interest in Transactions Using E-Commerce (Study on Generations Y & Z in Aceh Province)***

Febrianda Febrianda (Syiah Kuala University, Indonesia); Indayani Inda Indayani I (Universitas Syiah Kuala, Indonesia)

This study aims to determine the effect of the independent variables (perception of ease of use, perceived usefulness and quality of information) on the dependent variable (interest in transactions using e-commerce). This research is located in Aceh Province in August 2021. The population of this study is all generations of Y and Z in Aceh Province. The number of samples involved in this study were 467 respondents. Sampling was done by using quota sampling technique. The results of this study indicate that: (1) There is a partial effect of perceived ease of use on interest in transactions using e-commerce in generations y and z in Aceh Province, (2) There is a partial effect of perceived usefulness on interest in transactions using e-commerce in generations y and z in Aceh Province, (3) There is no partial influence of information quality on interest in transactions using e-commerce in generations y and z in Aceh Province, (4) There is a simultaneous influence of perceived ease of use, perceived usefulness and quality of information on interest in transactions using e-commerce in generations y and z in Aceh Province. Perceived ease of use, perceived usefulness and quality of information.

8:50 ***Crop Suitability Prediction Model for Malaysian Crop Diversification***

Er Pin Keong (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Vazeerudeen Abdul Hameed (Asia Pacific University of Technology and Innovation, Malaysia)

Crop diversity is one of the important perspectives to be observed in agriculture. The crop diversity is significant for production stability as well as nutrition security. However, the crop diversity in Malaysia is inadequate as the agricultural activities are devoted to oil crop plantation. Therefore, this research aims to discover the suitable new tropical crops to be cultivatable in Malaysia for crop diversification. FAOSTAT was selected as data source, while Decision Tree, Random Forest and Artificial Neural Network were chosen for predictive model training. The Random Forest is having the highest accuracy among the modelling techniques. Therefore, Random Forest models were chosen as crop suitability predictive models to discover the suitable crop with Malaysian environmental data as input. There are nine tropical crops subjected to investigation. The crops are dates, sorghum, yams, avocados, kola nuts, chickpeas, lentils, sisal and fonio. Dates, sorghum, yams, avocados and kola nuts were predicted to be not suitable to the Malaysian environment. Whereas chickpeas, lentils, sisal and fonio were predicted to be cultivatable with the Malaysian environment. Unlike other crop diversification research that done on other countries, which are soybean cultivation in Europe, red kidney bean in Iraqi and Cassava in Thailand. This research investigated the potential of nine tropical crops besides soybean, red kidney bean and cassava. At the same time, the crop suitability was predicted with respect to Malaysian environment. Future works are suggested to investigate the procedure of new crop cultivation and the tactic to release the crop to the market.

9:10 ***Analysis of Feature Selection and Data Mining Techniques to Predict Student Academic Performance***

Mukesh Kumar (Lovely Professional University, India); Chetan Sharma (Chitkara University Himachal Pradesh, India); Shamneesh Sharma (UpGrad Education Pvt Ltd, India & UpGrad Campus, India); Nidhi Walia (Chandigarh University, India); Nazrul Islam (K L Deemed University, Andra Pradesh, India)

Educational Data Mining is a field of study that aims to find patterns and information in educational institutions through mining educational data. To become a better teacher, teachers need to anticipate their pupils' performance patterns. Knowledge gained from it can be used in various ways, such as a strategic plan for delivering high-quality education. This report suggests that students' final grades can be predicted using data mining techniques based on past research. On two educational datasets related to mathematics classes and Portuguese language lessons, three well-known data mining approaches, such as Decision Tree, JRip, Naive Bayes, Multilayer Perceptron, and Random Forest, were utilized in the experiments. As a result, using the employed data mining methods, student success might be predicted with reasonable accuracy.

9:30 ***Smart Health Technology Model for Adoption of IoT in Automobiles for Driver's Safety***

Afreen Iqbal (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad

Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

Evolution of transport systems is going side by side with the human history. Nowadays, it has become hard to imagine a life without a vehicle. To accommodate the enormous growth in population, the number of vehicles also have been increased rapidly. Apart from providing convenience, this has also resulted in increased number of road accidents and deaths. This research is focused on adoption of IoT in automobiles for driver's safety to overcome the number of road accidents. This research proposes a smart health technology model that consists of an IoT based steering wheel equipped with the sensors and cameras as well as the architectural description of implementing it. The architectural model provides a communication framework between driver, service provider, patrolling police, ambulance service and the mobile application users in the nearby cars. Authors have used the literature review and expert interviews as the basis of collecting input and applied tool-based data analysis techniques to reach conclusions. Authors have also performed the validation of the model using expert review to ensure that the proposed architectural model is generally acceptable and can provide the reflection of real-world requirements.

9:50 ***IoT-based CO2 Gas-level Monitoring and Automated Decision-making System in Smart Factory using UAV-assisted MEC***

Md Masuduzzaman, Ramdhan Nugraha and Soo Young Shin (Kumoh National Institute of Technology, Korea (South))

Monitoring the CO2 gas level in a smart factory is essential as the high levels of CO2 gas negatively affect the human body, causing various physical problems. This paper presents an Internet of Things (IoT) based CO2 gas level monitoring and automated decision-making system inside a smart factory using the unmanned aerial vehicle (UAV) and multi-access edge computing (MEC) technique. Firstly, different IoT device is used to continuously monitor and detect the CO2 gas level data using gas sensors. Due to the drawback of sink node failure and the centralized data collection technique of wireless sensor networks, a UAV-based continuous CO2 gas level monitoring approach has been introduced in this study. Moreover, the MEC-enabled data processing technique is utilized by offloading the sensor data from the UAV considering its limited battery capacity and low processing power. Finally, a blockchain-based secure decision-making system is designed to evacuate the smart factory premises by alerting all employees in an emergency case of an excessive level of CO2 gas existence. Result analysis shows that the IoT devices can successfully monitor and detect the CO2 gas level in the smart factory using the UAV. Furthermore, the UAV can securely offload sensor data to the MEC server to analyze and make an automated decision to alert all employees in a smart factory to evacuate if CO2 levels are too high.

PS5-7: PS5-7

Chair: Phutawan Ho (Mae Fah Luang University, Thailand)

8:30 ***IoT in Fault Detection and Prediction***

Dhruv Shah (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

The objective of this research is to study industries using IoT with other technologies in fault detection and come up with a convenient and universal solution for fault detection. This paper will benefit practitioners, implementers, and managers in implementing it in their environment. It is a concept paper and we propose a solution to increase the uptime of the machines/ systems. We will be collecting and analysing qualitative data on the current trends of IoT in fault detection and performing our research on secondary data. We will be analysing different approaches made tackle faults in many different industries. By analysing the industries, we would try to come up with a universal solution to help different industries in fault detection and predicting any faults beforehand. With the help of various other technologies for example cloud computing, machine learning, big data, and analytics the usability and universality of IoT have increased. It helps us in getting real-time stats for processing and making better business decisions.

8:50 ***IoT in Farm Productivity Enhancement***

Rishabh Roy (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

With the changing climatic conditions, variability in the number of resources in different geographies, decreasing land resources, limited irrigation supply, rising prices of inputs, and increasing stress factors, there is a need for sustainable agriculture practices. Deploying embedded physical microsensors, nodes, software and electronic components together forming an ecosystem to track and monitor the health of the crop and weather to digitize agricultural practices. Usage of such advanced technology into agriculture will help in evaluating irrigation needs, crop conditions, predict weather forecasts, and allow the farmers to take precautionary measures. Monitoring farmlands using IoT system and networks of devices allows remote sensing with real-time data. The study is aimed to analyse the impact of digital and IOT applications in terms of farm production and revenue contribution to the economy. The research will cover the applied technological aspects, benefits of digitizing agriculture, comparison with developed foreign agricultural practices and its scope in India. Scope of the research covers contribution of advanced technology in agriculture towards improving farm production and resource optimization. The analysis will further support the potential of digitizing agriculture and provide data in terms of production, revenue and contribution to extensively implement IOT in agriculture. The study will benefit companies, government and other auxiliary parties in mapping the outcome of their investment in this aspect.

9:10 ***Retail Gaze: A Dataset for Gaze Estimation in Retail Environments***

Shashimal Senarath, Primesh Pathirana and Dulani Meedeniya (University of Moratuwa, Sri Lanka); Sampath Jayarathna (Old Dominion University, USA)

The concept of gaze object prediction, predicting a bounding box for a person's gazed-at object, is a very applicable and contemporary technique in the retail industry. However, a review of recent works demonstrates that existing gaze object prediction-related datasets in retail is limited to controlled environments and do not consider retail product category area segmentation annotations. To this end, we propose Retail Gaze, a dataset for gaze estimation in real-world retail environments. Retail Gaze is composed of 3,922 images of individuals looking at products in a retail environment, with 12 camera capture angles. Furthermore, we use state-of-the-art gaze estimation models as baselines to benchmark the Retail Gaze dataset and comprehensively analyze the results obtained.

9:30 ***IoT in Inventory Management***

Smitha Smitha (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

Evolution of businesses is happening with the advancements in technologies so is happening in the retail industry. One such technology is IoT which is building a smart environment for informed manufacturing by connecting products, processes, infrastructure and people. With the penetration of digital sensors, all the components of the manufacturing value chain system can significantly benefit from it that allows high visibility and better control of production processes and also enables the automation of tasks side by side. (Objective) This research reviews how IoT can revolutionize inventory management in retail sector and focuses on the present scenario, challenges in implementing IOT for inventory management, and future scope of IOT in this field. It includes analysis of the various technologies currently being implemented like RFID, IIOT to optimise the inventory. (Research Methodology) A narrative literature review approach has been adopted for the study using the academic documents published in peer reviewed scientific journals, white papers, articles and data mining of the existing records and databases. (Implications) This study aims to help the academicians, supply chain professionals and experts by keeping them in line with recent developments, challenges and future scope of IOT in the domain of inventory management. (Originality) It is to analyse how IOT has been integrated into the day-to-day operations of retail market and stores to improve and optimise the inventory and how it can be further be improved.

9:50 ***Multi Layered Deep Neural Network for Feature Extraction in Cross Domain Crowd Counting***

Janith Gunawardhana, Rukmal Senavirathne and Buddhika Karunarathne (University of Moratuwa, Sri Lanka)

Automated crowd density monitoring is an emerging area of research. It is a vital technology that assists during recent disease outbreaks in preserving social distancing, crowd management and other widespread applications in public security and traffic control. Modern methods to count people in crowded scenes mainly rely on Convolutional Neural Network (CNN) based models. But the model's ability to adapt for different domains which is referred to as cross domain crowd counting is a challenging task. To remedy this difficulty, many researchers used Spatial Fully Convolutional Network (SFCN) based crowd counting models with synthetic crowd scene data. They covered many image domains with few-shot learning to reduce the domain adaptation gap

between source and target image domains. In this paper, we propose a new multi-layered model architecture instead of SFCN single-layered model architecture. The proposed model extracts more meaningful features in image scenes along with large scale variations to increase the accuracy in cross domain crowd counting. Furthermore, with extensive experiments using four real-world datasets and analysis, we show that the proposed multi-layered architecture performs well with synthetic image data and few-shot learning in reducing domain shifts.

PS5-9: PS5-9

Chair: Nattaphon Rangsaritvorakarn (Mae Fah Luang University, Thailand)

8:30 ***An Intelligent Fire Detection and Extinguishing Assistant System Using Internet of Things (IoT)***

Pramod Mathew Jacob (Providence College of Engineering Chengannur & Chengannur, India); Jeni Moni (Providence College of Engineering Chengannur, India); Roja Robins, Merlin Varghese, Sherlin Babu and Vismaya Bose (KTU, India)

Fire accidents are one of the major problems facing in our society. Fire detection and extinguishing should be done efficiently to decrease the risk of fire accidents. Currently fire rescue men are doing services to extinguish fire. But in some cases, it may lead to the loss of lives of firemen. We propose an intelligent mini fire-fighting robot using Arduino UNO for this purpose. The proposed robot will detect and extinguish fire automatically without human intervention. The robot can also be manually controlled using an Android App to extinguish fire. The Android app also notifies the user about the fire outbreak through alert messages and alarm. Thus, our system can be used in fire outbreak situations to detect and extinguish fire in an efficient and effective manner.

8:50 ***Sign Language Translation Assistant using Machine Learning***

Jeni Moni, Renju Varghese, Anjali Binoy, Blessy Benny, Lisna Rajan and Bijin Benni (Providence College of Engineering Chengannur, India)

One of the most important and greatest that have been achieved in the past few years is the invention of sign language. But unfortunately, it is not widely known by the common people and only the trained ones will be able to understand it thereby making it harder for the deaf-mute people to communicate with the common world. For solving this many inventions like sign language translating systems were also made. But for the existing systems there are many faults and misconceptions that reduce the accuracy of the system. In this model, camera of a smartphone device has been used to capture the images of the hand gestures as input and based on CNN model used to train the dataset of the proposed system it classifies the hand gesture inputs and give the text translations as the output of the system.

9:10 ***Applications, Tools and Technologies of Robotic Process Automation in Various Industries***

Shagun Sharma (Chitkara University, India); Anjali Kataria (Chitkara University); Jasminder Sandhu (Chitkara University, India)

Now days every industry from healthcare to banking is revolutionized and working automatically to deal with online processes using Artificial Intelligence (AI) to work with Machine Learning (ML) enabled systems. A subfield of AI called Robotic Process Automation (RPA) came into play to automate the human tasks. It is a technology for the automation of repetitive processes to minimize workload and time of human agent. It is best known for fast processing, handling huge amount of data and reduces computational time, cost by improving accuracy, quality and speed. This technology is becoming famous and used in many sectors like education, agriculture, pharmaceutics along with accounting to enhance work mechanism. Every industry, generate huge amount of data in each year which is very difficult to manage. RPA has many advantages, features and applications from dealing with huge data to reducing man power and enabling the system to work automatically. There are various platforms like- Power Automate, Pega, WorkFusion, Jacada, WinAutomation, NICE systems, Automation Anywhere, Blueprism and UiPath, in which RPA could be implemented to automate the tasks. Further, in this article, pros, cons and applications of RPA are identified along with the ML approaches used for RPA processes.

9:30 ***Bahdanau Attention Based Bengali Image Caption Generation***

MD Sayedur Rahman (Bangladesh University of Business & Technology - (BUBT), Bangladesh); Md

Sahrial Alam, Md Ikbal Hosen and Khairul Anam Mubin (Bangladesh University of Business and Technology, Bangladesh); Sharif Hossen (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

In the past few years, many works are done in object detection using images and machine translation. Inspired by those works we introduced BABBICG that generate automatically bangla caption based on images. The Conventional encoder-decoder architectures performance curse will reduce by Bahdanau Attention and achieving momentous improvements over encoder-decoder architectures. In this work, we extract features from images using InceptionV3 neural network and generate caption using RNN decoder. We used Gated Recurrent Unit (GRU) approach as RNN. We evaluate the model using BanglaLekhaImageCaptions dataset from Mendeley Data that can help to generate bangla caption.

9:50 ***An Experimental Comparison of Classification Algorithms for Premium Beef Customer Buying Intention***

Nattaphon Rangsaritvorakarn (Mae Fah Luang University, Thailand); Suthep Nimsai (Mahidol University, Thailand); Korawit Fakkhong (Mae Fah Luang University, Thailand); Chatrudee Jongsureyapart (School of Management, Mae Fah Luang University, Thailand)

This study aimed to explore and compare machine learning performance to predict the customer purchasing decision within premium beef shops. The sampling locations were Thailand. The population used in the study consisted of 436 valid responses from 5 premium beef shops. The data was obtained by using questionnaires consisting of gender, age, three questions of product, one question for the price, one question for the place, and three questions for appearances. The study was used four classifier algorithms: k-nearest neighbors, decision tree, random forest, and xgboost model. The models were compared to find the highest accuracy for premium beef customer behavior data set. Random forest algorithms were evaluated to have the best performance in predicting premium beef purchasing decisions in Thailand. The model has an accuracy of 88.62 percent, precision of 88.46 percent, recall of 85.19 percent, f1 of 86.79 percent, and AUC of 95 percent. The most accurate algorithms can be used to forecast consumer product purchases and comprehend the principles of elements that influence buying decisions.

PS5-8: PS5-8

Chair: Tosporn Arreeras (Mae Fah Luang University, Thailand)

8:30 ***An Intelligent Smart Bin System for Solid Waste Management in Smart Cities***

Jeni Moni (Providence College of Engineering Chengannur, India); Pramod Mathew Jacob (Providence College of Engineering Chengannur & Chengannur, India); Shital Pawar (Bharati Vidyapeeths College of Engineering for Women, India); Renju Varghese (Providence College of Engineering Chengannur, India); Prasanna Mani (VIT Vellore, India); Girish K K (Providence College of Engineering, Chengannur, India); Graham G (Providence College of Engineering, India)

Waste Management and Processing System is important as the amount of waste generated by every city is increasing drastically. Managing large amount of waste is a very difficult task. One of the herculean tasks in this scenario is the procedure for checking the waste bin levels manually. So, we need a smarter way for collecting and managing the waste in an efficient manner. This model introduces an IoT aided smart waste management system which uses various sensors to detect the level of garbage in the bin. When the waste reaches a certain threshold value, an alert message is transmitted to the authorities concerned so that proper actions can be initiated for waste management. This system also aims to help the waste collector to track and locate the bins easily through the possible shortest path using Travelling Salesman Algorithm. An Android application is also created which helps the administrator to control and coordinate various activities and also the users to locate the nearby bins. Thus, the model is both economical and time saving.

8:50 ***Smart City Assessment for Sustainable City Development on Smart Governance: A Systematic Literature Review***

Usman Ependi, Adian Fatchur Rochim and Adi Wibowo (Diponegoro University, Indonesia)

smart city is a concept in the sustainable development of cities. Smart city assessment measures smartness based on various smart city indicators. One of the indicators in a smart city is smart governance which aims to provide public services through ICT support. Various phenomena and issues in smart city assessment (smart governance) are crucial for exploration, especially in indicators, capabilities, stakeholders, weaknesses, and factors influencing smart governance. A literature review is an analysis model used for exploring smart city assessment. The phases performed consist of three main steps. The first phase of preparation consists of identifying requirements and developing a review protocol. The second implementation phase consists of searching, selecting, and extracting materials. The third phase is reporting (dissemination of results). This study reviews the SCA to answer various phenomena, especially indicators, capabilities, stakeholders, weaknesses, and factors influencing smart governance. The review results show various issues and phenomena in the smart city assessment. The issue in the indicator aspect is the first step that needs to be fixed. The issue in the capability aspect lies in the characteristics of the city to be measured. The stakeholder aspect has a problem in the field of involving various stakeholders to get the results of the assessment from multiple points of view. At the same time, the issue on the weakness aspect is paying attention to smart city goals and world standards. Stakeholders require more pay attention to the issue of smart city assessment. Therefore, the process and implementation adhere to the smart city's standards and its objectives. Influences have been identified, namely policy domain, trust, political & institutional environment, internet reach and use, and spatial characteristics

9:10 ***Augmented Reality in Agriculture***

Ritu Lachhwani (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

The World population is expected to become around 9.8 billion by 2050 and with this rise in population the demand to feed them is also growing. However, Agriculture sector is not completely equipped to fulfil these demands efficiently. Emerging technologies can help aim the sustainable and efficient ways of farming. Objectives: To find the areas in which Augmented Reality can be implemented for Precision Farming. To automate the farming practices in order to gain higher yields and quality of agricultural product and to make agriculture sustainable. Research Methodology: A secondary research is done using documents published in peer reviewed scientific journals, white papers and articles. Existing data of Agriculture sector, before and after the implementation of technologies, is used for quantitative analysis. Implications: This research paper aims to benefit the Farmers by reducing their efforts and resources in farming as well as increasing the production output and efficiency. It also aims to help people associated with agriculture (Businessmen, Scientists, Academicians) in finding a way for smart farming.

9:30 ***Improving Agricultural Productivity: Use of Automation and Robotics***

Nikita Biswas (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

In the last few years, it is seen that robotics have been extensively adopted in the agricultural industry to enhance its productivity and competency. New trends and researches focus on the agricultural field of robotics that looks forward to building a group of small-scale robots that will collaborate to optimize farming practices. Objectives: This research paper emphasizes on the deployment of robotics and the use of automation in agricultural applications. It explores the practicality of these robots towards agricultural development and also the perspective of farmers on such robots used. Research methodology/analysis: Analysis of the data collected from certain surveys of farmers on the use of robots and automation in farming is used to find a descriptive result of a future perception of agricultural industries. Application of such Agri-bots for different methods of farming and the relation between farmers and automation is collected from secondary data retrieval. Finding: There are different robots and different levels of automated machinery used in the agricultural industry, along with farmer's point of view on robots, the paper will be covering the different Agri-bots that are deployed and automated for specific agricultural methods. Implications of the study: This paper will be useful to the agricultural industries, and will give a clear idea of the level of investment that should be implemented on automated guidance systems and robots in farming with respect to the decrease in farmers and increase in automation. Originality: The paper discusses the farmer's perspective on automation in farmer. It gives a glimpse of whether the farmers are sceptical about the safety and terms of reliability in using these agricultural robots on their land. This paper will also include the number of human interactions between these autonomous machines and robots. The number of such robots with different levels of human dependency and full autonomous functionality will be discussed.

9:50 ***Light weight integrity protection scheme for low latency smart grid applications: A Literature Review***

Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Akram A. Almohammedi (South Ural

State University, Malaysia); Ammar AL-Ashmori (Universiti Teknologi PETRONAS & Yemen, Malaysia)

A smart grid is a developed network of communication controls, computers, digital automation, and new technologies in tools working together to make the grid more efficient, more flexible, and more reliable. smart grid is providing cost-effective electricity to consumers in a secure manner. This paper focuses on different schemes used for the protection of data integrity, authentication of data, and secure integration of smart grid components. We review the existing approaches used for the integrity and security of data transmitted in smart grid systems. We review the existing approaches (i.e., watermark, steganography) used for privacy, authentication, the confidentiality of data and information along with their limitations. We also discuss the importance of strict time-constrained applications with high security and protection of data integrity transmitted over smart grid components. This paper will help to develop a better understanding of current authorization, authentication, and data integrity issues in smart grid systems also give directions to explore relevant areas for research purposes.

Friday, March 25 10:10 - 10:20 (Asia/Bangkok)

Break: Coffee Break

Friday, March 25 10:20 - 12:00 (Asia/Bangkok)

PS6-4: PS6-4

Chair: Krit Sittivangkul (Mae Fah Luang University, Thailand)

10:20 ***Facility Location Problem to Identify The Optimal Allocation of Near-Expired COVID-19 Vaccines***

Anak Agung Ngurah Perwira Redi (Bina Nusantara University, Indonesia); Gerlyn Altes, Arni Acla and Justine Kyle Chan (Mapua University, Philippines); Parida Jewpanya (Rajamangala University of technology Lanna Tak, Thailand); Anak Agung Ngurah Agung Redioka (STIMIK Primakara, Indonesia); Yogi Tri Prasetyo and Michael Young (Mapua University, Philippines)

Coronavirus 2019, popularly known as Covid-19, which was declared a pandemic by the World Health Organization in 2020, has affected billions of people and claimed millions of lives. Leaders and corporations worldwide have worked feverishly to develop a vaccine to combat the virus. After numerous tests and trials, covid-19 vaccines were developed. Given the magnitude of the need for vaccination, these vaccines should not go to waste due to expiration from slow-paced rollouts or oversupply. This study aims to maximize near-expired COVID-19 vaccines in cases of oversupply by distributing them in neighbouring facilities at a low delivery cost and by utilizing P-median modelling. All gathered data were loaded into and run through the AMPL simulation model, with varying P-values or the number of facilities to be located to act as suppliers to the remaining demand nodes. Following the model simulation, it was observed that the P-value is inversely proportional to the cost; therefore, the cost of delivering near-expired Covid-19 vaccines to the demand clusters decreases as the P-value increases. Through the simulation model, the researchers determined which node facilities, if opened, would incur the lowest delivery cost.

10:40 ***Architectural Design and Development Recommendations for iBeacon based Smart Shelves in a Retail Store***

Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Junie Halim (Asia Pacific University of Technology and Innovation (APU), Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia)

The growth in digital technology has given most sectors an economic boost, especially retail. Digital technology has successfully made a new concept of an online store and brick-and-mortar presence. However, a physical store is still in demand for most

individuals, considering the convenience of grab and go without waiting for delivery. Some recent studies found that most retailers face the same issue with the customers who tend to be more demanding towards selecting a product with specific brands. Therefore, the retail sector, which could provide more products, brands, and freshness, will win, whereby small retailers could only depend on pricing to beat the competitor. Henceforth, the researchers have proposed the implementation of iBeacon based smart shelves for retail stores based on IoT devices. This research mainly focuses on most retailers' current state and issues. The study was conducted using a survey with sixty audiences from the retail sector. This research critically evaluates similar systems and justifies the use of IoT devices and other infrastructural components using a systematic approach, and finally proposes the architecture and recommendations for building the iBeacon based smart shelves for retail stores.

11:00 ***Mixed-Integer Linear Programming Model for Safe Zone Selection during Air Pollution Disaster***

Phongsaphak Thoenburin and Chawis Boonmee (Chiang Mai University, Thailand)

According to the air pollution disaster problem in Thailand, the human health problem becomes a significant issue. Many researchers and the government of Thailand attempt to help the people to avoid this problem. This paper aims to propose a model for safe zone selection during air pollution disasters. The mathematical model is applied to seek suitable locations for the case study under several conditions such as budget limit, capacity limit, bound of the number of selected locations in each area, and bound of total score obtained from the evaluation. The numerical data were generated for testing the proposed mathematical model. Based on the numerical data, the results found that the proposed mathematical model could generate the optimal solution and seek suitable locations for building safe zones in the air pollution disaster under the proposed limitations. This research will be of great significance in helping government consider the strategic placement of safe zones and helping people avoid the hazard of air pollution.

11:20 ***A review of the elements of a fabrication laboratory to develop engineering prototypes***

Sutthinee Srisawat (King Mongkut's University of Technology North Bangkok & Division of Information and Communication Technology for Education, Thailand); Panita Wannapiroon and Prachyanun Nilsook (King Mongkut's University of Technology North Bangkok, Thailand)

Unemployment is a global problem which, as well as being the source of scarcity and other problems, threatens people's well-being. Effectively addressing the issue is one of the new challenges of the workplace in the age of digital technology. Tertiary education institutions strive to develop people's potential before they enter the world of work. Developing the necessary skills - including operational skills with tools - requires laboratory training. A fabrication laboratory is an open space that promotes tooling skills, along with systematic and creative thought processes and inventiveness. All these can, in turn, form the basis of innovations that will benefit the community as a whole. This study began by looking at the trends and research related to fabrication laboratories. Then, in Step 2, it analysed and synthesised the relevant research, examined the elements of the fabrication laboratory, created a synthetic table and, finally, summarised the results. These showed that most of the research consisted of eight elements: 1) design spaces, 2) rapid prototyping tools, 3) electronic instruments, 4) mechanical tools, 5) scientific instruments, 6) a Group Learning Toolkit, 7) other tools, and 8) learning exchange or publishing spaces. This study is a review, therefore, of the research relating to the elements in the proper learning environment of a tertiary education fabrication laboratory. It is necessary if we are to develop the potential of learners across all sectors before they enter the world of work.

11:40 ***Trajectory Control of Quadcopter in Matlab Simulation Environment***

Seda Nur Yaşar (Firat University, Turkey); Ebru Karakose (Fırat University, Turkey)

An unmanned aerial vehicle (UAV) is an autonomous aircraft without a pilot and passenger. UAVs are also called "drone". However, while drone is used to refer to any type of UAV in the common language, it mainly refers to UAV mostly used in military context. UAVs and today's competent usage areas are mentioned in this study. A detailed examination of quadcopters, which is a four-engine unmanned aerial vehicle, is given and it is emphasized why simulation is necessary for UAVs. The implementation of the study is carried out in Matlab-Simulink and the quadcopter is simulated in the Matlab environment. Two different simulation processes are considered in the study and with the Simulink model used for the first simulation, the trajectory tracking problem is tried to be overcome by adding a direct Eulerrate script instead of the PD controller output. A second simulation is needed to fly the UAV in a circular trajectory. When the results obtained for both simulations are examined, it has been determined that the second simulation provides a more periodic trajectory tracking than the first simulation.

PS6-1: PS6-1

Chair: Sirikan Chucherd (Mae Fah Luang University, Thailand)

10:20 ***Automatic Detection of Brain Tumor from CT and MRI Images using Wireframe model and 3D Alex-Net***

Shilpa Rani (Lovely Professional University, Punjab, India); Sandeep Kumar (K L University, India); Deepika Ghai (Lovely Professional University, India); MVV Prasad Kantipudi (Symbiosis Institute of Technology, Symbiosis International Deemed University, India)

Automatic detection of brain tumor from CT and MRI images is always an effortful task because of complexity and heterogeneous nature of images. Many neural networks architecture (NN) have recently been developed for segmentation and classification tasks and have proved quite successful. Studies that have taken into account the sizes of items have been rare; as a result, the majority of them show poor detection performance for little objects. This has the potential to have a big influence on illness identification. Recently, 3D neural network became popular because they are able to work with large labelled dataset. We proposed a 3D Alex-Net based architecture which can classify the different type of brain tumor at early stage. First, the contour of the image is identified and given to the classifier for the class-wise identification. We tested our proposed approach on RSNA-MICCAI brain tumour and found that proposed method delivers the highest accuracy, and the results provide a clear advantage for classification of brain tumor in medical images.

10:40 ***Classify the Outcome of Arterial Blood Gas Test to Detect the Respiratory Failure Using Machine Learning***

Sivapathasuntharam Kajanan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Senthan Prasanth (Physical Sciences and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Sri Lanka); Manitheepan Kandiah (James Paget University Hospital, United Kingdom (Great Britain))

Analysis of Arterial Blood Gas (ABG) is an important investigation to measure oxygenation and blood acid levels. It is crucial in measuring the clinical status and contributes to an efficient and effective healthcare plan. Generally, ABG is applied in the emergency care units (ECU) and intensive care units (ICU). Most of the time, the doctors and nurses have difficulties identifying the type of respiratory failure with the help of ABG test results. So, during this research with the adaption of certain supervised machine learning approaches, namely Extreme Gradient Boosting (XGBoost), Adaptive Boosting (AdaBoost), Catboost, Random Forest, Naïve Bayes, Support Vector Machine (SVM), LightGBM, K-Nearest Neighbors (KNN), Neural Network (NN) and Decision Tree and have been incorporated with the intension of identifying the type of the respiratory failure with the highest accurate technique. To fulfil this purpose, 700 patient test results have been obtained from a public hospital in Sri Lanka. From the results discovered, XGBoost outperformed against all other techniques in identifying the type of respiratory failure with the highest accuracy of 98.65% and the lowest error rate of 1.35%. To ensure whether the XGBoost outperformed against the different percentages of training and testing data, K-fold cross-validation with five folds also has been performed with the dataset. The cross-validation produces results with an accuracy of 98.45% and the lowest error rate of 1.55%. In conclusion, XGBoost has been utilised in developing the prediction model. This would be a promising start for a future research scholar to adopt the hybrid techniques and the deep learning techniques to identify the causes of respiratory failure and the prediction of the type of respiratory failure.

11:00 ***Novel Composite Feature Fusion for Diabetes Diagnosis using Artificial Neural Network***

Kaustubh Sharma (Ramrao Adik Institute of Technology, India); Pramod Haribhau Kachare (IIT Bombay & Ramrao Adik Institute of Technology, India); Sandeep Baban Sangle (D Y Patil University & NA, India); Rohit Chudiwal (Vellore Institute of Technology & Vellore, India)

Diabetes is a chronic disease that causes excess blood sugar and can harm vital organs if untreated. The conventional diagnosis methods require special laboratory equipment and medical experts. For alleviating these issues, the paper presents an early fusion of novel features using exploratory data analysis for automated diabetes diagnosis. Evaluations are performed using

the Pima Indian Diabetes Diagnosis dataset. Firstly, inter-attribute correlation analysis identifies the redundancy in attribute pairs. Moderately correlated attribute pairs form the novel five continuous composite features by either multiplying or dividing depending on diagnosis computational aid and individual features values. Novel composite threshold-based linear separators are used to generate eleven binary features. Dataset attributes and composite features are fused with four earlier reported features calculated by principal component analysis to generate a feature vector. A cross-validated multi-layer perceptron neural network resulted in the best accuracy of 93.51%. Comparative analysis with several earlier reported diabetes diagnoses showed the proposed work's superiority.

11:20 ***Polyp Segmentation in Colonoscopy Images using U-Net and Cyclic Learning Rate***

Betül Bulut (Tarsus University, Turkey); Ertan Bütün and Mehmet Kaya (Firat University, Turkey)

Colonoscopy is an important procedure in the diagnosis of colorectal cancer. The use of computer aided systems has become important to support clinicians performing colonoscopy and to reduce the number of missed polyps. Image segmentation studies using deep learning achieves successful results and can play a crucial role on diagnosis procedure of colorectal cancer. We trained Unet architecture for polyp segmentation and determined the learning rate, one of the most important training parameters, using Cyclic Learning Rate policy. The results show that the success rate is increased in the segmentation task performed Unet with Cyclic Learning Rate policy. In this study, we have contributed to more accurate detection of polyp diagnosis, which can be a precursor to cancer, by using the UNET architecture with an effective learning rate strategy.

11:40 ***Classification of Body Cavity Fluid Cytology Images Using Deep Learning Models***

Murat Ucan (Dicle University, Turkey); Mehmet Kaya (Firat University, Turkey)

Cytological examinations have an important role in the detection of cancerous cells. The use of convolutional neural networks in the classification of medical images has become an increasingly popular topic. Detection of malignant cells with artificial intelligence methods will ensure that human errors are minimized. Within the scope of the study, it is recommended to perform cytological examinations faster and easier by using deep learning methods. In this study, Body cavity fluid cytology images dataset with open access via kaggle was used. Classification of cancerous cytological fluid samples was made using AlexNet, GoogleNet and ResNet50 architectures. Afterwards, the results were compared with another study using the same data set in the literature. The results showed that the Resnet Architecture achieved the most successful results in the classification of cytological images. ResNet50 architecture achieved 99.13% accuracy, 98.75% sensitivity and 99.25% specificity.

PS6-9: PS6-9

Chair: Ammar Jreisat (University of Bahrain, Bahrain)

10:20 ***The impact of Company Characteristics and Macro Factors on Stock Prices: Machine Learning approach***

Bui Thanh Khoa (Industrial University of Ho Chi Minh City, Vietnam)

The stock price forecast is one of the critical topics in the financial sector. Determining factors affecting the stock price helps investors capture the trend of change, thereby making appropriate decisions. The main objective of this study is to use the Maximum Likelihood (ML) method for dynamic table data and compare it with Ordinary Least Square (OLS), Generalized Method Of Moments (GMM) in the machine learning approach. The study was conducted in the Ho Chi Minh City stock market (HOSE) from 2017 to 2021. Data includes 302 non-financial companies listed on hose markets. This study divided the data into two parts: training includes 202 companies, and the testing includes 100 remaining companies. As a result, the model uses the efficient ML method with the lowest RMSE and MAE. Therefore, the ML method should be considered an alternative method for the GMM method in estimating the data-related parameters.

10:40 ***How Environmental Performance and Cost Decisions Impact to The Financial Performance? Case of Mining Industry***

Indayani Inda Indayani I and Ayu Wandira (Universitas Syiah Kuala, Indonesia)

The issue of environmental impacts caused by the mining industry which is listed on the Indonesian stock exchange and its handling has still surfaced. This issue has motivated this research to review the effect of environmental performance and environmental costs on financial performance of 12 mining issuers on the Indonesian stock exchange with an observation period of nine years (2010-2018). Multiple linear regression analysis with SEM-PLS was used to verify the research model. The results show that both of them have a negative correlation both on environmental performance with financial performance and environmental costs on environmental performance. Environmental impact cases due to the operation of mining companies and the high cost of environmental management may be the causes for the decline in the mining company's financial performance. Thus, this becomes a dilemma for companies and the government is expected to help them overcome this dilemma.

11:00 ***Can Carbon Emission Disclosure, Environmental Performance, and Corporate Social Responsibility Improve Firm Value in Indonesia?***

Nazila Nazwa (Syiah Kuala University, Indonesia); Fauziah Aida Fitri (Economic and Business & Syiah Kuala University, Indonesia)

The purpose of this study was to examine the effect of carbon emission disclosures, environmental performance, and corporate social responsibility on firm value. The sample of this research consists of the 27 largest carbon emitting companies listed on the Carbon Disclosure Project and the Indonesia Stock Exchange from 2016-2019. The total sample observed was 108 annual report data from the selected companies. Using multiple linear regression, this study found that carbon emission disclosures, environmental performance, and corporate social responsibility have a positive effect on firm value. The results of the study show that companies that disclosed more detailed information on carbon emission disclosures, environmental performance, and corporate social responsibility have improved firm value.

11:20 ***The Impact of Oil Price Changes on the Stock Markets in Main Oil Exporting Countries: The Role of COVID-19***

Somar AL-Mohamad (American University of the Middle East, Kuwait); Ammar Jreisat (University of Bahrain, Bahrain); Mohamed Sraieb and Audil Khaki (American University of the Middle East, Kuwait); Mustafa Raza Rabbani (University of Bahrain, Bahrain)

This paper aims at contributing to the existing literature on impact of oil price shocks on stock markets in oil exporting countries by measuring the impact of COVID-19 pandemic of the dynamic patterns and time path of reactions of stock markets in oil exporting countries to oil price shocks before and during the COVID-19 pandemic, in addition to investigating the most significant structural breaks in these markets during the time period from 2013 and 2021. The results in this study indicate that the majority of developing oil exporting in this study have experienced a major structural break in their stock markets in during the drastic oil price decrease in 2014, whereas their developed counterparts have been subject to structural break during the CIVID-19 pandemic. The outcomes of the generalized impulse response analysis indicate that, in general, stock markets in oil exporting countries are more influenced by oil price changes during COVID-19 pandemic as compared to pre-COVID-19 sub period.

11:40 ***Oil prices and the stock market: How COVID-19 impacts oil-importing countries?***

Mohamed Sraieb (American University of the Middle East, Kuwait); Ammar Jreisat and Mustafa Raza Rabbani (University of Bahrain, Bahrain); Somar AL-Mohamad, Nasser El-Kanj and Audil Khaki (American University of the Middle East, Kuwait)

This paper aims at measuring the impact of COVID-19 pandemic on the dynamic patterns and time path of reactions of stock markets in oil importing countries to oil price fluctuations in pre and during COVID-19 pandemic. This paper also depicts the significant structural breaks in oil exporting stock markets during the time from 2013 and 2021. The results in this study indicate that the majority of the oil importing markets have been subject to a major structural break during COVID-19 period, whereas the stock markets in China, Spain, Germany, and Japan experienced structural changes in 2014 and 2018 due to oil price shock and domestic economic factors, respectively. The results in this paper also find that, in general, the stock markets under consideration have become less responsive to one standard deviation change in oil price during COVID-19 as compared to the pre pandemic sub-period. the outcome of this study implies and recommends policy makers in these countries to take further steps toward enhancing the dependence on the alternative energy resources such as solar power and wind in order to make their economies less vulnerable to the global energy market's shocks.

PS6-3: PS6-3

Chair: Abdulsattar Alazzawi (University of Bahrain, Bahrain)

10:20 ***Factors Affecting Community-based Enterprises' Customers Buying Decision: A Case Study of Chiang Rai OTOP Project***

Teeris Thepchalerm and Phutawan Ho (Mae Fah Luang University, Thailand)

Customer buying decision has always been a popular research subject. However, there are very few studies dedicated to community-based enterprises' customers. Therefore, this article aims to identify the significant factors that affect community-based enterprises' customer buying decisions. The data collected from a community-based project called One Tambon One Product project's customers were analyzed by exploratory factor analysis and revealed five main groups of significant factors. This article also proposes some practical implications for community-based enterprise and the policymakers regarding community-based enterprise.

10:40 ***Leadership Cultural Intelligence to Improve Decision Making Process in Cross-Cultural Work Atmosphere***

Marwan Mohamed Abdeldayem and Saeed Hamedd Aldulaimi (Applied Science University, Bahrain); Abdulsattar Alazzawi (University of Bahrain, Bahrain)

The aim of this study is to provide an empirical evidence on the value of using a coherent organizational framework of Cultural Intelligence (CQ) to pursuing tasks effectively in diverse contexts. Hence, a qualitative research design was used to achieve the research objectives. The study employs in-depth Interviews with 60 participants from Gulf Air (GA) to collect the required data for this research effort. The open-ended qualitative questions used, have enabled participants to provide supplementary evidence around cultural intelligence and were valid for interpretation. This study provides an understanding of how individuals perform in multicultural environments, which can be helpful to managers in formulating new motivational strategies to enhance employee performance. The results show significant characteristics that predict employees' ability to function effectively in a multicultural work environment. These findings have implications for GA and other companies looking for survival and growth in the global marketplace. Given the research findings, senior leaders of GA (and other airlines companies) should give CQ a priority, define and develop its goals, and value employees with high CQ to improve organizational performance in international assignments.

11:00 ***Synergetic Effect of Entrepreneurial Orientation and Big Data Analytics for Competitive Advantage and SMEs Performance***

Muzaffar Asad (University of Bahrain, Bahrain); Muhammad Uzair Asif (University Utara Malaysia, Malaysia); Ather Azim Khan (University of Sialkot, Pakistan); Zafrul Allam (University of Bahrain, Bahrain); Mir Satar (Saudi Electronic University, Saudi Arabia)

Small and medium enterprises are considered as the backbone of any developing economy. The growth rate of small and medium enterprises in Pakistan is low because of performance issues. This is because of use of traditional methods, whereas the world is moving towards digitalization. The literature over performance in developed countries identified the importance of big data analytics and entrepreneurial orientation for gaining competitive advantage and higher performance. Hence, this study has considered entrepreneurial orientation and use of big data analytics as the basic element for gaining competitive advantage to achieve high performance. The data has been collected from purposefully chosen 100 firms that were implementing big data analytics for decision making. The data was collected using adopted questionnaire with 7 Likert Scale for measuring the responses. The owners and managers of the firms were chosen as the representative of small and medium enterprises. The findings, after ensuring the reliability of the instrument, revealed that entrepreneurial orientation and big data analytics have a strong direct impact over performance and the two variables were explaining 41.5% variation in performance. Afterwards competitive advantage was introduced in the model, and it was observed that competitive advantage has significantly increased explained variation to 53.9%. The mediating role of competitive advantage between big data analytics and performance was significant at 5% level of significance, whereas the mediating role of competitive advantage between entrepreneurial orientation and performance was significant at 10% level of significance. The findings ensured that the use of big data analytics is crucial for higher performance, growth, and survival of firms in the digital era. The findings contribute to the resource-based view by adding the role of big data analytics and extending the theory to performance rather limiting it to competitive advantage.

11:20 ***Investigation of Governmental Strategy Prioritization for Greenhouse Gas Emission Reduction based on the UN Environmental Program***

Ali Karasan (Yildiz Technical University, Turkey); Fatma Kutlu Gündoğdu (National Defence University, Turkey); İhsan Kaya and Bestami Özkaya (Yildiz Technical University, Turkey)

The greenhouse gas emissions (GHGE) are the primary reason for climate change, leading to disastrous events such as storms, droughts, sea-level rise, and floods already being felt worldwide. Many essential contracts and protocols have been discussed and implemented worldwide to reduce GHGE. Among them, The Paris Agreement, the most important global climate agreement to date, was adopted, and Turkey is one of the countries that signed. Similar to country-based incentives, to reduce GHGE globally, the United Nations (UN) has determined strategies at three action levels: government, private and public levels. Based on Turkey's current situation, in this study, a decision-making procedure that focuses on governmental action plans to reduce the GHGE in Turkey for the determined sectors by the UN environmental program is suggested. To do that, one of multi-criteria decision-making (MCDM) methods Best-Worst method is suggested based on z-numbers that can consider the data's impreciseness and the hesitancy of the experts. The proposed methodology is applied to prioritize 35 action plans concerning six sectors. Based on the 23-experts judgments, Energy, Industry, and Transportation are determined as the most critical sectors that should be debated. Moreover, committing to more ambitious nationally determined contributions and energy transition strategies is determined as the most appropriate action plan that the policy-makers can consider.

11:40 ***The Continuous Intention to E-learning System Adoption of Students in the Covid-19 Pandemic: The combination of TAM and TTF theory***

Bui Thanh Khoa, Nguyen Thi Phuong Thao and Lung Thi Kieu Oanh (Industrial University of Ho Chi Minh City, Vietnam)

Because of social distancing, many students must study at home using an E-learning system in the Covid-19 pandemic. This paper aims to study the continuous intention to use the E-learning system of students in the Covid-19 pandemic by applying the Theory of Technology Acceptance (TAM) and the Theory of Task-Technology Fit (TTF). This paper applied both the qualitative and quantitative methods. The purpose of the qualitative method is to confirm and adjust the scale, whereas quantitative research aims to figure out if there is a continuous intention to use the E-learning system of students in the Covid-19 pandemic. The result indicated that students in Vietnamese universities tend to continue using E-learning not only in the Covid-19 pandemic but in the future, they will keep using E-learning because of social influence and its usefulness ease of use. Based on the results, the study has proposed several recommendations to improve and develop E-learning for Vietnamese universities for the future development of Vietnamese education.

PS6-7: PS6-7

Chair: Popkarn Arwatchanakarn (Mae Fah Luang University, Thailand)

10:20 ***Does Banking Performance Matter for Indonesian Economic Growth?***

Maulidar Agustina and M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia); Said Musnadi (Universitas Syiah Kuala, Indonesia); Faisal Faisal and Hafasnuddin Hafasnuddin (Universitas Syiah Kuala (USK), Indonesia); Yahya Yahya (Sekolah Tinggi Ilmu Ekonomi Sabang (STIES), Indonesia)

This study examines the contribution of commercial banking performance to Indonesian economic growth over the period from January 2010 to December 2019. Specifically, it empirically explores the short- and long-run effects of total credit, loan to deposit ratio, non-performing loan, return on assets, third party funds, and inflation on the industrial production index. Using a Vector Error Correction Model (VECM), the study found that the commercial bank has an insignificant contribution to the Indonesian economy in the short run. However, in the long run, the total credit, loan to deposit ratio, and third-party funds positively contributed to the national economy. These findings reconfirmed the positive role of the banking sector in promoting the long-run economic growth of Indonesia. These results provide some important implications for the banking industry to offer more innovative products and services based on digital banking and fintech. In addition, the Indonesian Monetary Authority should support banking activities and develop an efficient credit allocation mechanism using advanced fintech in responding to the 4.0 era to further promote the

real sector of the Indonesian economy.

10:40 ***Knowledge Economy and Investment Decision aided by Regional Innovation development: A Framework***

Madhavi Damle (Symbiosis International University (SIU), India); Bala Krishnamoorthy (Narsee Monjee Institute of Management Studies (NMIMS), India)

In today's competitive era, the growth in regional business competencies stimulates the regional economy. Business development necessitates readiness in the availability of appropriate resources. The proposed framework derives integration of businesses when aggregated efficiencies in industries within the region and so as a practice. This study attempts to conceptualize the regional innovation framework with measurement parameters from other studies as a review. Furthermore, regional efficiencies are vital as we move towards the knowledge-led economy. The proposed framework is in terms of Innovation Capital, Businesses under industries aggregated, capabilities such as internal skill development, business orientation, collaborative perspective, and knowledge management to compete within Industries, with their performance measures as Innovation success. Moreover, this study also compares the present Indian Innovation Index (2020) for the deficiencies. These lack strong measures for development within regions. Thus, this study focuses on the Innovation Index performance as a primary objective derived from a substantial solid foundation of parameters of enablers making a "Regional Portfolio" using the studies from eminent innovation indices. The study contributes to framework development for achieving regions' readiness levels. The implications that this study sets out are long-term plans for enhancing efficiencies for Knowledge-based economies, required efforts, investment decisions.

11:00 ***The effects of global investment assets on the Thai stock market***

Popkarn Arwatchanakarn, Hathaichanok Kuendee and Jakravut Srijunngam (Mae Fah Luang University, Thailand)

This paper sets out to examine the factor affecting the Thailand stock market, especially bitcoin, by applying the autoregressive distributed lags (ARDL) approach and the Bayesian VAR model with Gibb sampler with the data ranging from October 18th, 2017 to September 17th, 2021. The overall results show that the bitcoin and S&P500 index are two primary determinants of the Thai stock market. Both bitcoin and the S&P500 have a positive impact on the SET index, at least in the short run. Conversely, the volatility index and the gold price have a marginally negative impact. In particular, bitcoin can be considered as alternative asset for investors' portfolio choice.

11:20 ***Investment decision in cloud gaming-based businesses opportunities: An analysis of the cloud gaming industry***

Pranav Shrivastava (Symbiosis University, India); Madhavi Damle (Symbiosis International University (SIU), India)

Cloud gaming is a form of computing that combines cloud computing with computer games. It has several advantages over other types of gaming, the most prominent of which is developer ease of development/deployment. Consumers don't have to spend as much money on high-end devices to play games because cloud games can work on thin client devices. This paper seeks to provide a quick overview of the existing cloud gaming industry and information on how emerging technologies can aid in cloud gaming development by referring to all previous studies on the subject. This study also intends to forecast market size and compare cloud gaming platforms based on their delivery services as of the research data. This study will also identify weaknesses and opportunities of cloud gaming by SWOT analysis.

11:40 ***A Decision Support Framework to conceptualize the Impact of 5G on Smart City Ecosystem***

Honey Joshi (Symbiosis Institute of Digital and Telecom Management, Symbiosis International University, India); Sujata Joshi (Symbiosis International University - Institute of Telecom Management, India)

5G, fifth-generation technology, is driving digital transformation in the smart city ecosystem by allowing huge number of connections concurrently and omnipresence of the network. There are abundant discrete studies on technology use cases

related to smart cities; however, the impact of 5G technology has not been significantly covered as of yet. Therefore, the aim of the paper is to understand impact of 5G technology on Smart City ecosystem and how it leads to smart decision making. A decision support framework is used to structure the process of deriving insights for better decision making. The study explores the following aspects related to the concept; a) Applications of 5G in Smart city ecosystem b) Decision support framework for the impact of 5G in Smart City ecosystem. Narrative literature review approach has been used in which literature related to the emerging 5G technology has been analysed with respect to smart cities. Academic documents published in peer-reviewed scientific journals, reports, and articles have been used for research. The paper aims to provide insights to academicians on the use of 5G applications in a smart city ecosystem, and practitioners on developing solutions for Smart Cities using 5G technology for effective decision making.

PS6-8: PS6-8

Chair: Kiki Khoifin (Mae Fah Luang University, Thailand)

10:20 ***Measuring Total Factor Productivity of Zakat Institutions in Aceh, Indonesia***

Hafasnuddin Hafasnuddin, Zulkifli Zulkifli, Dinda Meisuri and M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia); Yahya Yahya (Sekolah Tinggi Ilmu Ekonomi Sabang (STIES), Indonesia); Hijri Juliansyah (Universitas Malikussaleh (UNIMAL), Indonesia)

This study aims to measure and decompose Total Factor Productivity (TFP) of zakat institutions (Baitul Mal) across 24 districts/cities in Aceh province, Indonesia over the period from 2015 to 2019. Using Data Envelopment Analysis (DEA) to calculate the Malmquist TFP Index, the study documented that, on average, the TFP level of Baitul Mal in managing zakat has slightly improved, contributed mainly by technical progress. Meanwhile, the reduction in efficiency level has deteriorated the TFP of zakat institutions. Overall, the zakat institutions across 24 districts/cities in the province have recorded different levels of TFP. A proper policy design is strongly needed to further enhance the productivity of zakat management by optimally utilizing and properly combining existing resources to raise the highest zakat funds and its distribution. Zakat institutions are suggested to fully utilize the online-zakat payment system.

10:40 ***Islamic Listed Companies and Their Decisions for Timely Financial Reporting: Case of Indonesia***

Khalil Dasli, Ridwan Ibrahim, Ratna Mulyany and Zata Zuhri (Universitas Syiah Kuala, Indonesia)

This study aims to determine what influences financial reporting timeliness in the context of Islamic listed companies. It seeks to identify whether profitability, managerial ownership, institutional ownership, opinion of public accountants, and activity ratios influence financial reporting timeliness of companies listed in the Jakarta Islamic Index (JII), Indonesia. Sample consists of 24 companies which are listed on the Jakarta Islamic Index during the study period of five years (2014-2018). Using multiple linear regression analysis, this study revealed that all of the independent variables consisting of profitability, management ownership, institutional ownership, public accountant opinion, and activity ratios, have significant influence on the timeliness of financial reporting of firms listed on the Jakarta Islamic Index (JII). This finding implies that even within Islamic listed companies, financial reporting timeliness is very much dependent on various company attributes hence the company performance in terms of profitability as well as other factors of ownership structure and operational efficiency such as activity ratio seems to align well with their decisions to report timely. The importance of financial reporting timeliness shall even be more prevalent for companies listed at the Islamic index due to their association with the distinctive characteristics of shariah requirements.

11:00 ***Can the Islamic Banks be Efficient? A Data Envelopment Analysis (DEA) in Indonesia***

Muhajirul Asrar, Ratna Mulyany and Darwanis Darwanis (Universitas Syiah Kuala, Indonesia)

There have been doubts and critiques over the existence of Islamic banks and whether they can function efficiently given their distinctive characteristics. Hence more studies are needed to examine the Islamic banks' efficiency. Using the Data Envelopment Analysis (DEA) technique, this study evaluates the efficiency of Islamic banks in Indonesia from 2018 to 2020. Sample of 14 Islamic banks in Indonesia was utilized resulting the total 42 observations for analysis. Data were acquired from financial statements on the Indonesia Stock Exchange's official website. The findings reveal that most of the Islamic banks in Indonesia

were highly efficient in the three years period of study. The 14 Islamic banks during 2018 to 2020 were laid in category very efficient and efficient, wherein, on average, all Islamic banks in Indonesia were at an efficient level. The findings implies a positive overall performance of Islamic banks in terms of its efficiency hence investors and stakeholders may have greater confidence in the Islamic banks. This also indicates the promising future for the further development of Islamic banks.

11:20 ***Islamic Banking, Economic Growth, and Poverty Reduction in Indonesia***

Maulidar Agustina (University of Syiah Kuala & USK, Indonesia); M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia); Said Musnadi and Faisal Faisal (Universitas Syiah Kuala, Indonesia); Hafasnuddin Hafasnuddin (Universitas Syiah Kuala (USK), Indonesia); Suriani Suriani (Universitas Syiah Kuala & USK, Indonesia)

This study aims to examine the role of Islamic banks, economic growth, and price stability on poverty reduction in Indonesia over the period from 2010 to 2019. A monthly time series data of Total Financing (TF), Financing to Deposit Ratio (FDR), Non-Performing Financing (NPF), Return on Assets (ROA), and Third-Party Funds (TPF) were used to measure Islamic banking role, while the economic growth, price stability, and poverty were respectively measured by Industrial Production Index (IPI), Consumer Price Index (CPI), and Poverty headcount ratio (POV). An Autoregressive Distributed Lag (ARDL) bound test is utilized to examine the short- and long-term effects of Islamic banks, economic growth, and price stability on poverty reduction in Indonesia. The study documented that Islamic banking, economic growth, and price stability had the significant short- and long-term effects on poverty reduction. These findings offer various key implications for the banking industry and policymakers in order to eradicate poverty through strengthening economic growth, Islamic banking sector, and price stability. The Islamic banking industry should provide a quality of financing allocation to promote economic growth and price stability that, in turn, reduce poverty.

11:40 ***Role of Internal Control in Improving Financial Management-Based Performance: The Case of Mosques in Banda Aceh City, Indonesia***

Ghrina Zikran (Universitas Syiah Kuala, Indonesia); M. Shabri Abd. Majid and Suriani Suriani (Universitas Syiah Kuala (USK), Indonesia)

This study aims to examine the moderating effect of internal control on the relationships between asset management, debt management, and good mosque governance on the performance of mosques in Banda Aceh City, Indonesia over the period from 2016 to 2020. Of 104 mosques within 9 sub-districts in the city, 20 of them were selected as the sample of the study using a multi-stage sampling technique. From each 20 selected mosques, 5 staff of mosques (observations = 100) were asked to fill up the distributed questionnaires. Since the study utilized the panel data, thus the study used the moderated multiple regression panel technique. The study discovered that asset management and good mosque governance had a significant effect on mosque performance, while debt management has an insignificant effect on mosque performance. In addition, internal control was documented to have an insignificant moderating effect on the relationships between asset management, debt management, and good mosque governance on the mosque performance.

PS6-5: PS6-5

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

10:20 ***Understanding usage of IoT Applications and its impact on consumer decision making in Indian Automobile industry***

Shreya Wasnik (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

This research study aims to have a looming level towards modernist users who prefer in the vehicle buying sector, technology-driven features tightly connect development processes with software-driven feature updates. New generation people account for a sizable portion of the market for technology-driven automobiles; however, the older generation is exhibiting an equal degree of interest in similar purchasing and sale preferences. Hence, all leading Indian and global automakers started adopting and

inculcating many Internet of Things (IoT) features in the latest models of their automobile fleet; The way forward for the sector is clear and full of possibilities. It's time to kick it up a notch. These trends attract more automobile users as they consider such modern features to add safety and durability as human security has been considered the prime factor in today's world. This study elucidates the benefits of adopting IoT in Indian automobiles by the significant involvement of Gen Z. Despite several impediments, India's automobile sector has persevered and continues to grow. The industry's distribution channels are rapidly evolving, original equipment manufacturers (OEMs) are upbeat, digitization is accelerating, and the sector's potential is limitless

10:40 ***Segmentation and Multi-Layer Perceptron: An Intelligent Multi-classification model for Sugarcane Disease Detection***

Rishabh Sharma (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Sugarcane disease detection has been an active area of research for past decades, due to the increasing demand and supply of the crop, the higher production level led to a hike in the number of diseases encountered in the crop. Sugarcane red rot (SRR) is one of those diseases which has a draconian effect on sugarcane production and to eliminate that factor a multi-layer perceptron (MP) based deep learning (DL) model has been developed to build a system for identification and classification of 2000 image dataset of SRR disease based on 5 different disease levels. 99.12% of binary classification and 99.15%% of best multi-classification accuracy have been encountered along with a comparison of various levels of SRR disease. The proposed model has been proved to be an efficient model in terms of accuracy results for the classification of an image.

11:00 ***Application of AI, IOT and ML for Business Transformation of The Automotive Sector***

Mayank Jain (Symbiosis International-Deemed University, India); Prasanna Kulkarni (Symbiosis International Deemed University, India)

Automotive industry is essential in human lives. It is not possible to imagine a day without driving or some public transport. Today, digital technologies are making motor vehicles and the industry more intelligent. The entire value chain of automotive business is transforming. A better connect with customers is needed. All this is possible through advanced digital technologies. Automotive companies are overhauling business processes and relationships. Legacy IT systems for manufacturing, engineering, supply chain, etc. are being reinvented. This transformation encompasses software, robotics, connected devices, and artificial intelligence. Artificial intelligence (AI) made the dream of self-driving cars possible. AI will soon transform every device. Tesla, Google Waymo, and Nvidia are examples of machine learning algorithms used to detect how far different objects are, from the car. Augmented reality (AR) and virtual reality (VR) analysis enables users to watch blind spots. AI enhances security by simultaneous coordination with many sensors. With AR, VR, and mixed reality (MR), automotive companies have a personalized retail platform and a competitive edge. This paper studies AI applications in the automotive sector. It studies the recent developments and applications of AI. It discusses how companies use AI for cost reduction, market strategies, sales promotion, and even funding.

11:20 ***Deep Convolutional Neural Network for Detection of Cigarette Smokers in Public Places: A Low Sample Size Training Data Approach***

Erickson C. Santiago (Batangas State University, Philippines)

Cigarette smoking is not only known to be harmful to the smokers' health but also to the people around them and despite the efforts made by the government such as creating policies for controlling tobacco use and increasing tax rates, second hand and third hand smoke that may harm the health of the people in public still occur. A solution for detecting smoking violators in public places is presented. This will be beneficial to the public as each smoker can affect many individuals going to their work or just having fun outside of their homes that do not smoke but still suffer from second-hand smoke or even third-hand smoke. To create a smoking detection, the YOLOv3 model was used to develop a not smoking and smoking detection model. The detection model that was created for this paper has a training and validation accuracy of 96.2% with a mAP value of 91.36%.

11:40 ***A Retrospective CNN-LSVM Hybrid Approach for Multimodal Emotion Recognition***

Rupali Gill, Jaiteg Singh and Aditi Moudgil (Chitkara University, India)

Emotions play a vital role in a person's life and it affects their physically. Therefore, emotions can be manipulated by measuring customer perception of a place. People use facial expressions as a tool to express emotional states. Face recognition is

always an exciting and challenging area for research on computer perspective. In this study, seven emotions such as anger, disgust, fear, happy, sad, surprise and neutral states have been classified through facial expression images. This paper presents a novel CNN-LSVM hybrid approach for multimodal emotion recognition. The proposed approach uses two datasets namely CK+ and FER-2013 images for emotion recognition. During CNN experimentation, several texture features have been extracted which have been used for classification purposes. The classification of texture features is achieved through the linear support vector machine technique. The LSVM model is responsible to classify the texture features. Throughout CNN, different hyperparameters such as batch size, epochs, and momentum have been used. With help of the CNN-LSVM approach, 92.3% average classification accuracy for different emotions has been achieved.

PS6-6: PS6-6

Chair: Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India)

10:20 ***Sentence Level Sentiment Classification Using Machine Learning Approach in Bengali Language***

Tuhin Hossain, Ahmed Ainun Nahian Kabir, Md. Ahasun Habib Ratul and Abdus Sattar (Daffodil International University, Bangladesh)

Opinion mining, often known as sentiment analysis has been an impactful area of research in recent times. Numerous studies have taken place in natural language processing to extract sentiments or opinions from the text in order to build context-aware systems. However, a major portion of those studies was mainly based on the English language. Only a handful number of sentiment analysis research has been conducted on the Bengali language. Moreover, the quantity of state-of-the-art Bengali datasets is also very limited. In this paper, we highlight a unique dataset that consists of Bengali sentences extracted from various reputed online newspapers and social sites. This dataset has been crafted manually in person, and it also includes two class sentiment tags. Our approach can be implemented an intelligent system that deals with the Bengali language which is able to extract sentiments from the mentioned dataset.

10:40 ***A Bibliometric analysis of blockchain and its applications in the Insurance Industry***

Durga Maduri (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The objective of this research paper is a comprehensive study on how Blockchain can revolutionise Insurance sectors by improvising efficiency in gains and cost reductions and eliminating the duration taken for uncovering the information or fraudulent claims. This paper uses a narrative literature review approach. The critical aspect of this research paper lies in how effectively Insurance Industry is transforming and adapting to digital technology by employing blockchain in their process. In order to save time and lower their transactional costs by ensuring zero threat from cyberattacks, which is a key area to improve their customer experience and enhance their profits by retaining the old customers with utmost satisfaction. This study benefits insurers by saving their transactional costs, eliminating fraudulent crimes, and uncovering information.

11:00 ***A case study Evaluation of Blockchain for digital identity verification and management in BFSI using Zero-Knowledge Proof***

Md Akram (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The BFSI sector represents a significant portion of any developing or developed economies of the world involving all Banking, Insurance, and Non-Banking Financial Institutions. This sector is the biggest buyer of identity management technology solutions and services. This accentuates the pivotal role of a robust identity authentication mechanism in the BFSI sector. The rapid proliferation of digitization in the different financial sectors, disruptive technological innovations around different services, and everchanging user behaviors are revolutionizing the way in which the institution of this sector interacts with their customers, employees, and other stakeholders. The definition of great consumer experience has widened in scope and includes facets

like consumer trust, security, real-time, etc. The traditional identity verification system like passwords, pins, biometric, facial recognition, etc. are prone to vulnerabilities. Blockchain addresses the lacunas in the present system by using a decentralized approach to transform digital identity. The purpose of this research paper is to study the use of blockchain in digital identity verification, the benefits it brings to identity management, and different techno-commercial use cases. This paper will also examine the Zero-knowledge proof and the role of cryptography. For this study, a case study technique was used, in which different use cases of blockchain for digital identity management in the BFSI sector have been analyzed. Academics, practitioners, and government officials will benefit from the research article in investigating, implementing, and developing solutions for digital identity verification using blockchain.

11:20 ***Facilitating decision making through IoT and Big Data in product development***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Swastika Singh Singh (Symbiosis International (Deemed University), India)

When it comes to product development, a new wave has set forth that targets the very specific needs of a very specific customer base, which in turn leads to the development of hyper-specialized products. Hyper-specialization, when coined simply, is the breaking down of a larger process into smaller pieces [1]. This involves complexities and criticality as it caters to the intricate details of regular life. What happens when we objectify this term and give it a 3D reality? The evolution of the Internet of things has made it possible for the devices embedded in everyday objects, to send and receive data themselves. However, with the current trend of the personalization of the market, where companies target niche industries, the products need to cater to the very specific needs of a very specific customer. As the market has shifted more to the process of individualization of customers, this research paper aims to shed some light on the usage of the Internet of Things and Data Analytics to build a design model for such products. The idea is to mix the technologies of the Internet of Things and data analytics with product management while studying the market for its recent trends and developments. Since this technological bend focuses more on value creation and building new insights into the usage pattern, this concept is more focused on shifting from an asset-centric transactional model to a relationship-oriented service model.

11:40 ***Decision making with iot- paving an integrated approach***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Soumya Bajpai (Symbiosis International Deemed University, India)

While IoT has many benefits, its real strength lies in marketers' capacity to look at their consumers from a far larger perspective, regardless of touch points or phases in the total customer life cycle. Starting with better listening and involvement is a good place to start, though. A better client experience from beginning to end is another matter. This is where the Internet of Things (IoT) may play a role, not just in consumer applications, but also in industrial applications where simple value can be produced. To effectively use IoT in marketing, marketers must think outside the box and offer relevant services in a way that is useful and relevant to actual customers. This is a chance for marketing that is both comprehensive and customer-centric, as well as integrated.

PS6-2: PS6-2

Chair: Hatem Masri (University of Bahrain & University of Sousse, Bahrain)

10:20 ***Optimal Sizing of PV, Wind based Grid Connected Hybrid Renewable Energy Systems for Rural Areas in Presence of EVs***

Bikash Parida (NIT Durgapur WB, India); Aashish Kumar Bohre (NIT Durgapur, India)

This paper represents the need for optimization of a HRES which comprises solar, wind and battery. In this paper a detailed study of a system which is connected to a grid and combined with different kind of renewables is given. The location used in this case study is Siliguri, West Bengal. Here, the whole simulation study has been done in Hybrid Optimization Model for Electric Renewables (HOMER) software. The geographic location of the study area is 26°43.6'N (lat) and 88°23.7'E (long) respectively.

The objective of this paper is to get a reliable independent system and levelized cost of energy. Two loads have been connected to the system, one is a household load and the other load is for charging of an electric vehicle and renewables such as PV and Wind has been used. The optimum architecture means the size of the PV array, wind turbine, and number of battery string, are optimized by HOMER. Homer helps in optimizing the cost and it calculates the cost of energy (COE) and net present cost (NPC). By the help of NPC and COE, we can find the best system and proper modifications can be done. The optimization result shows that the system consisting of PV, Wind Turbine, Converter and Grid is the superlative system when compared with COE and NPC of system.

10:40 ***The nexus between education and trade openness: Analyzing the role of carbon dioxide emission in Australia***

Pattareeya Meecee, Manthiralai Jiwetpong and Jidapa Nooruksa (Mae Fah Luang University, Thailand)

This study is an attempt to examine the impact of economic growth, government spending, education, carbon dioxide emission, and labor productivity on trade openness in Australia. For this research, we will use the dataset over the period from 1989 until 2019. The ARDL bounding test approach was checked to examine the long-run and short-run relationships of such effects respectively. Additionally, the direction of the relationship between variables could be investigated using VECM Granger causality. In the long run, results showed that economic growth, government spending, education, and CO2 emissions had positive relationships with trade openness, while labor productivity has a negative relationship with trade openness. The result of causality represents the unidirectional from economic growth and labor productivity to trade openness in the long-run relationship.

11:00 ***IoT Based Intelligent Energy Monitoring System for Computer Laboratories***

Lee Wei Zhang (Asia Pacific University of Technology and Innovation (APU), Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

One of the essential infrastructural components of a computer laboratory is electronic equipment. People can work in a light and comfortable environment because of electronic devices. IoT devices are used in the intelligent computer laboratory monitoring system, interacting with software and hardware to improve its effectiveness and usability. Because electronic devices must be turned on during working hours, ways to reduce energy consumption must be found to build a greener society. This can be accomplished by incorporating sensors to collect data on individuals entering and exiting the laboratory in order to manage the electronic equipment's switching. The research aims to use appropriate IoT-based technologies to reduce the energy required to operate electronic devices. After an exhaustive discussion of existing literature and related systems, current developments are critically reviewed. A set of IoT-based solutions is recommended in the study. Using a prototype model, the authors demonstrate how an intelligent computer laboratory monitoring system can attain optimal performance.

11:20 ***A Feasibility Study for Biodiesel Production in Kingdom of Bahrain***

Mona Sahwan (University of Bahrain, Bahrain); Hatem Masri (University of Bahrain & University of Sousse, Bahrain); Lokesh Verma (The Bahrain Petroleum Company (Bapco), Bahrain); Abdulla Alotaibi (Neutral Fuels, Bahrain)

Biodiesel also known as fatty acid methyl ester (FAME), obtained from the transesterification of the vegetable oil used cooking oil (UCO). FAME is considered a renewable fuel to the existing conventional diesel or fossil diesel obtained from crude oil. The necessity for biodiesel production in Kingdom of Bahrain is to minimize the carbon footprint in general, improving sustainability as well as minimizing the impact of our existence on the climate change. The technical and commercial feasibility of the biodiesel in Kingdom of Bahrain is done on a plant, which produces 350 tones/month biodiesel using UCO as main feed. The expected market size for biodiesel in the Kingdom could be as high as approximately 110,000 liters per day, if it is to substitute 10% of the conventional (fossil) diesel utilization by 2025. Currently there is no market for FAME in Bahrain and Government policies are required to promote the use and growth of the biodiesel market in the Kingdom. The capital investment to produce 350 tones/ month biodiesel production is approximately BD400,000 (machinery only). The working capital for 3 months is approximately BD215,000. The raw material contributes to about 96% of the total for biodiesel production. Therefore, a sensitivity analyses is performed to compare the manufacturing costs of a biodiesel. In conclusion, the major cost towards production of biodiesel is raw material. Second most important aspect in biodiesel feasibility is the glycerol price, which is currently quite low. If glycerol purity

could be increased this will at higher price and will help reducing the overall production cost of the biodiesel, which could make it more economical to produce and sell.

11:40 ***Investigation the Impact of using Integrated PV System at Avro City in Duhok-Iraq***

Beren Sardar Abdullah (DPU, Iraq); Siddeeq Yousif Ameen (Advisor & Duhok Polytechnic University, Iraq)

With the rise in the inhabitants of the earth, the demand for energy has been increased causing many problems in the economic and environmental issues. Thus, the move towards cheap and clean energies such as solar energy is the most appropriate and urgent solution to meet the energy demand problem. One type of solar energy is PV (photovoltaic) solar system that is able to capable of meeting energy needs. In this paper the energy shortages specifically at Avro city (large residential complex) in Duhok city-Iraq. The proposed solution was the adoption of a PV system connected to the national grid on the roofs of the buildings. For the assessment and evaluation. A PV Syst software was used to simulate and analyze the performance of the proposed PV system. An 89.6 KWp PV (Monocrystalline silicon) system connected to a grid that with many orientations (fixed axis, vertical axis, horizontal axis(E-W), and dual axis), are used with 216 modules of PV. To meet the most electricity for the building by the PV system, each module has a rating of 415W, and uses three inverters with a rate of 25 Kw for each inverter. The simulation findings were examined in to evaluate the system of photovoltaic performance. This includes assessing the PV array's energy output, energy injected into the grid, performance ratio, and other nominalized energy for each state.

Friday, March 25 12:00 - 13:00 (Asia/Bangkok)

Lunch: Lunch

Friday, March 25 13:00 - 13:45 (Asia/Bangkok)

PN4: Plenary Session 4

Portfolio Diversification In the Presence of Tail Risk

Friday, March 25 13:45 - 15:25 (Asia/Bangkok)

PS7-2: PS7-2

Chair: MVV Prasad Kantipudi (Symbiosis Institute of Technology, Symbiosis International Deemed University, India)

13:45 ***A Review of Logarithmic Multiplier Hardware Architectures***

MVV Prasad Kantipudi (Symbiosis Institute of Technology, Symbiosis International Deemed University, India); Sailaja Vemuri (Pragati Engineering College, India); Venkata Kiran Sanipini (Aditya College of Engineering & Technology, India)

Multiplication is the basics for any arithmetic operations of a central processing unit and graphical processing units. Nowadays, multipliers are widely used in digital image processing, digital signal processing, network security, and multimedia applications. Therefore, high-performance multipliers are mandatory to design and implement fast multimedia devices. Researchers have suggested several high-performance multipliers in the last few decades, such as booth multiplication, Wallace tree multiplication, bough wooley multipliers, karatsuba multipliers, and logarithmic multipliers. Among the various schemes of multiplication

algorithms, logarithmic multiplication is widely used in image processing and multimedia applications due to its high performance. This paper analyses the very-large-scale integration (VLSI) characteristics of different logarithmic multipliers in terms of speed, power consumption, and area utilization. Based on the detailed review, this paper suggests that a logarithmic multiplier that uses an approximation-based multiplier by using the concept of double-sided fault distribution is deemed as a high-accuracy baseline design for implementing instead of using the Mitchell-based algorithm. This approximation-based design is also suitable for area utilization and power consumption.

14:05 ***Mixed-Integer Linear Programming Model for Stochastic Capacitated Lot-Sizing Problem Under Static-Dynamic Uncertainty Strategy***

Nuanpan Buransri and Heng Chheang (Rajamangala University of Technology Isan, Thailand)

This paper revisited the certain equivalent mixed-integer linear programming (MILP) developed by a previous study and provided a new model for solving a stochastic capacitated lot-sizing problem with backorder constraints under the static-dynamic strategy. The existing theories and methods that can be applied to solve the static-dynamic uncertainty strategy are available for both the two-stage and single-stage solutions. The proposed model is an extended version that will answer both "replenishment period" and "optimal replenishment order" simultaneously by considering a joint replenishment environment for multiple items with shared resources (a limited resource), also known as a capacitated lot-sizing problem. The numerical example and sensitivity analysis are performed to investigate the effect of the changes in critical parameters on the behavior of the proposed model, such as the change of the mean of demand or the change of the product holding cost. The result shows that the system will produce the exact amount of demand in each period for each product, resulting in no excess inventory at the end of each period. Furthermore, the model tries to balance the cost of carrying inventory and the setup cost; whenever the system has a small holding cost but high setup cost, the model will produce high quantities for each product.

14:25 ***Protection of PCB from external mechanical influences***

Zainab Hussam Al-Araji (University of Baghdad, Iraq); Nada Ali Swaikat (University of Voronezh State Technical, Syria)

To ensure the protection of electronic devices (RES) in general and printed circuit boards as the central part, any malfunction in their work leads to the failure of the electronic device. This article reviews the nature and conditions of external influences and chooses a method to reduce their impact on RES performance. This paper describes the most common methods for minimizing external mechanical influences on electronic means, and numerical data demonstrates the effectiveness and validates a simulation environment designed to predict the optimal design of radio-electronic devices using Creo simulations.

14:45 ***Performance Analysis on Parallel Data Loading based on Concurrency Features***

Mohammad Ashekur Rahman, Asma Ul Hussna, Fabian Parsia George, Mir Lubna Latif, Yousra Mehrin and A. M. Esfar-E-Alam (BRAC University, Bangladesh)

Data migration and batch processing remain rudimentary processes in database systems while dealing with enormous volumes of data from multiple sources. Even before running Extract, Transform, Load (ETL) on parallel architectures, extensive querying and performance in a way challenges are required. Real-time data analysis, together with data aggregation and transformation, remains a problem for decision-making since data warehouses retain historical data and update it on a regular basis. However, optimization lessens resource consumption as well as ensures parallel processing efficiency while reducing the time window. The ultimate purpose of this paper is to instantly improve the performance of parallel data loading through concurrency. The conducted analysis shows concurrency on the Oracle database significantly improves the performance gain along with data loading time.

15:05 ***An automated pothole detection via transfer learning***

Necip Cinar (Dicle University, Turkey); Mehmet Kaya (Firat University, Turkey)

Potholes on the roads can cause many problems in traffic. They can cause malfunctions of vehicles, deterioration of suspension systems, additional repairs, and traffic accidents. It is very important to detect potholes quickly and with low costs for the maintenance and rehabilitation of roads. This shows that there is a need for automatic systems that can detect structural problems that may occur on the roads quickly and accurately. In this study, DenseNet121 architecture, which is a deep learning-

based method, is proposed for detecting potholes in roads. With the proposed approach, it is aimed to determine whether there are potholes in the road images in the dataset. In this study, potholes on the road were detected with 99.3% accuracy using the DenseNet121 network. This success is quite high when compared to similar studies in the literature. At the same time, this dataset was run and compared with ResNet50, InceptionV3, VGG19 and InceptionResnetV2 models with the same parameters. Among these models, the highest accuracy was obtained with DenseNet121.

PS7-3: PS7-3

Chair: Mullika Jantakad (Mae Fah Luang University, Thailand)

13:45 ***Cybersecurity Awareness Modeling Associated with Influential Factors Using AHP Technique: A Case of Railway Organizations in Thailand***

Pana Ungkap (RMUTP, Thailand); Therdpong Daengsi (Rajamangala University of Technology Phra Nakhon, Thailand)

This study aims to create a method for identifying and evaluating the factors that impact Cybersecurity Awareness (CSA) of Internet users. Focusing on the employees in the railway organizations in Thailand, seven individual different factors, including attitude, cognitive, experience (in cyber-attacks), education and gender are used to determine and measure the factors associated with CSA of users. After conducting a decision-making technique called the Analytic Hierarchy Process (AHP), for deriving the weight of each factor, the study shows that the most important factor is cognitive, its weight is 26.23 %. While the weights of experience, degree (of education), behavior, finance and gender are 22.43 %, 16.41 %, 15.92 %, 10.13 %, 4.99 %, 3.90 % respectively. Therefore, the CSA model associated with those factors is introduced eventually.

14:05 ***Mask R-CNN Architecture Based Railway Fastener Fault Detection Approach***

Merve Yilmazer and Mehmet Karakose (Firat University, Turkey)

Detecting and repairing faults in railway line components is of great importance in terms of transportation safety. Thanks to the successful results of deep learning techniques on images, progress has been made in defect detection studies. In this study, Mask R-CNN architecture, which enables segmentation in deep learning, was used to identify healthy and missing rail fasteners. Healthy and missing fasteners were labeled in the railway images obtained with the autonomous drone. The model was trained using labeled data and the performance of the model was evaluated with the data reserved for testing. It was determined that the method could detect healthy/missing fasteners with high accuracy rates and it was shown in the experimental results section. The precision value of the method is saved as 98% and the recall value as 96%.

14:25 ***Optimized Reward Function Based Deep Reinforcement Learning Approach for Object Detection Applications***

Ziya Tan (& Erzincan Binali Yildirim University, Turkey); Mehmet Karakose (Firat University, Turkey)

Reinforcement learning is considered a powerful artificial intelligence method that can be used to teach machines through interaction with the environment and learning from their mistakes. More and more applications are coming to the fore where Reinforcement learning has been newly and successfully implemented. It is frequently used especially in the game industry and robotics. In this article, a deep reinforcement learning approach, which uses our own developed neural network, is presented for object detection on the PASCAL Voc2012 dataset. Our approach is by moving a bounding box step-by-step towards the goal in order to fully frame the object in the picture. The created neural network consists of a 5-layer structure. In addition, it is aimed to maximize the mAP value by optimizing the reward function. The right choice in the reward policy will certainly affect the outcome and will play an important role in the training of the agent. Thanks to the optimized reward function, ground truth and the bounding box intersect at the highest rate, contributing positively to the result. As a result of the training that lasted for approximately 36 hours, the test results of 6 randomly selected classes were compared with the results of previous similar studies. Within the scope of this article, some artificial neural networks and basic studies in the literature using the Reinforcement learning approach for object detection are examined.

14:45 ***Decision Aid in Logistics during the COVID-19 Pandemic and Significance of a Digital***

Ecosystem

Muhammad Anshari and Quazi Sakalayen (Universiti Brunei Darussalam, Brunei Darussalam); Mia Fithriyah (Indonesia Open University, Indonesia); Syamimi Ariff Lim (Universiti Brunei Darussalam, Indonesia)

The COVID-19 outbreak has resulted in a significant increase in demand for online purchases, which has led to an increase in the demand for delivery staff. The research focuses on a case study to evaluate and examine the effectiveness, obstacles, and scenarios encountered by delivery workers when discovering issues that develop during the COVID-19 period. It analyses the factors that influence how work is delivered in various sectors of the workplace and makes recommendations for the logistics sector's digital transformation, particularly for firms that manage courier services, distribution centres, and e-commerce websites. The Root Cause Analysis (RCA) was utilized to create a proposal to assist the company in avoiding similar future risks, particularly from parcel delivery staff.

15:05 ***Exploring the Logistics Barriers in the Development of Multimodal Transportation; The case of Thai Textiles Export to Bhutan***

Wangchuk Rabten (School of Management, Mae Fah Luang University, Thailand)

This study aimed to explore the logistics barriers in the development of multimodal transportation. Thai textile export to Bhutan has been selected as a case study. Multimodal transport factors time, cost, and reliability with additional six logistics barriers were established and prioritized using AHP based on the current situation to the selected case study. Data were collected using in-depth semi-structured interviews and questionnaires from experts involved in the Thai textile export to Bhutan. The weighted result strongly identified and indicated transportation cost as the most influencing barriers with border infrastructure being ranked highest second level logistics barriers. These results can be applied and used for the development of efficient logistics systems as well as multimodal transportation

PS7-1: PS7-1

Chair: Worasak Rueangsirarak (School of Information Technology, Mae Fah Luang University, Thailand)

13:45 ***Comparison of deep learning models for brain tumor classification using MRI images***

Necip Cinar (Dicle University, Turkey); Buket Kaya and Mehmet Kaya (Firat University, Turkey)

Brain tumor is a type of cancer that can occur in humans, sometimes with fatal consequences, or seriously affect quality of life. Detection of brain tumors using deep learning methods is a very positive development for experts. Deep learning methods enable experts to perform tumor detection and treatment easier and faster. There are many methods are used to detect tumors from brain MRI images. Among these methods, deep learning methods have made a significant improvement over other methods. In this study, it is aimed to compare the models used for tumor detection from brain MRI images within the scope of deep learning methods. For this reason, the five most commonly used convolutional neural networks for brain tumor classification are discussed. VGG19, DenseNet169, AlexNet, InceptionV3 and ResNet101 models, which are Convolutional Neural Network (CNN) architectures, were used. MR images, which underwent the same dataset and preprocessing processes, were trained with these models with the same hyper-parameters. As a result of the study, the ResNet101 model obtained the highest accuracy rate with an accuracy value of 98,6%. In addition, the VGG19 model showed a very high accuracy rate of 97.2%. Other models have accuracy values of InceptionV3 94.3%, DenseNet169 92.8%, and AlexNet 89.5%, respectively. This low success rate reveals that the architectures used in these models are not suitable for studies on MR images compared to other architectures. As a result, it has been concluded that the use of ResNet architecture for tumor detection from brain MR images is more advantageous than other models.

14:05 ***Heart Disease Prediction and Analysis Using Ensemble Architecture***

Rafsun Jani and MD Shariful Islam Shanto (Bangladesh University of Business and Technology, Bangladesh); Md. Mohsin Kabir and Md. Saifur Rahman (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology,

Bangladesh)

Throughout the world, cardiovascular diseases (CVDs) constitute the main cause of morbidity and mortality. We can reduce premature deaths by identifying those who are at risk of CVDs early. Machine learning has been proven to be efficient in predicting cardiac problems. As a result, developing a prediction model to detect cardiac disease before it progresses to a severe level will provide enormous hope to people all over the world and will help with decision-making. In the artificial neural network and machine learning, classification and regression are common prediction approaches. Most classifiers have flaws and difficulties. However, ensemble architecture could help weak algorithms increase their performance. So, in this study, we offer a unique ensemble architecture that uses a hard voting mechanism to improve performance. XGBoost (XGB), LogisticRegression, RandomForest, and the K-nearest neighbors (K-NN) algorithms are employed in the ensemble architecture. The proposed model scores were obtained with a 94% percent accuracy rate.

14:25 ***A Method for Covid-19 Segmentation from X-Ray Images with U-Net***

Esra Balik and Mehmet Kaya (Firat University, Turkey)

The Covid-19 virus, which emerged in China and affected the whole world, resulted in the death of many people in a short time and caused many socio-economic problems. This virus, which is mostly seen in patients with chronic diseases, has been seen worldwide in cases where it progressed rapidly and resulted in death in healthy individuals. Early diagnosis is one of the most important things to be done for this virus, which has such great effects. It is necessary to minimize the risk by treating the patient after being diagnosed and isolated early. The long time elapsed while providing diagnosis in current diagnostic methods potentially increases the course of the virus. For this reason, it has been deemed necessary to investigate some alternative ways for the diagnosis of Covid-19. In this sense, a study area has been created because radiological images have the defining characteristics of the virus. In this study, Covid-19, pneumonia and normal classifications were first made using X-Ray images. Then, we tried to determine the area affected by the Covid-19 virus using the U-Net system for image tissue classification. Experimental results show us the applicability of the method with high accuracy.

14:45 ***Fuzzy MCDM Approach for Building Private Cloud Medical Records***

Irfan Syamsuddin (State Polytechnic of Ujung Pandang, Indonesia)

This paper aims to introduce the application of Fuzzy MCDM approach to tackle the selection issue in building private cloud medical records. Vast amount medical records currently requires a solution to build cloud data storage. Data storage based on cloud technology is currently required to deal with a continuous demand of electronic medical records in particular during covid 19. Private cloud data center is proposed to overcome the issue of storing daily medical records from sources. The study proposes a Fuzzy MCDM model based on the Analytic Hierarchy Process (AHP) in choosing the best open source cloud data storage for establishing private cloud medical records. There are many perspectives to be compromised during the selection process and all pairwise comparison met maximum inconsistecy rate allowed of 0.1. It is finally concluded that OwnCloud is the most suitable open source solution for solving the given problem.

15:05 ***Iot Enabled Mental Health Diagnostic System Leveraging Cognitive Behavioural Science***

Alankrita Rawat (Symbiosis International Deemed University, India); Saikat Gochhait (Lavale & Symbiosis International: Deemed University, India)

As the complexities of mental disorders grew in tandem with the COVID-19 pandemic, a technical solution to this problem became urgently necessary. To cater to the needs of those who are unable to reach out for direct assistance, IoT-enabled mental health diagnostic systems, in combination with cognitive-behavioral science, are a lifesaver. Advanced devices are used to track various hormones in the body and to apply behavioral and cognitive science to generate effective results. For the purpose of this research, we will review various Research Papers and articles published between 2010 and 2021, highlighting the findings added by these reports and the areas in which they were unable to explore. This research will be highly useful to numerous network and architecture companies that specialize in developing IoT devices for the healthcare industry, as well as to researchers, particularly in the field of neuroscience, behavioral science, and psychiatry. It may lead to stronger use of Internet of Things (IoT) devices to detect behavioral anomalies and improve effectiveness by taking corrective measures [34].

PS7-4: PS7-4

Chair: Panita Rachapaettayakom (Mae Fah Luang University, Thailand)

13:45 ***A comparative Analysis of 1D Convolutional Neural Networks for Bearing Fault Diagnosis***

Aydil Jomaa Bapir (Duhok Polytechnic University, Iraq & Firat University, Turkey); Ilhan Aydin (Firat University, Turkey & Firat, Turkey)

In many industrial applications, bearing monitoring is ranked as a crucial duty for condition-based maintenance. It enables the avoidance of unplanned maintenance while lowering the cost. For this objective, a variety of strategies have been devised to assure accurate and effective monitoring. This study offers a One-Dimensional Convolution Neural Network (1D-CNN) that is used to diagnose and identify early bearing faults based on Variational Mode Decomposition (VMD). Methods such as VMD-based feature extraction for defect detection are followed by multi-scale feature extraction for classification and diagnosis using CNN and pooling layers. Bearing fault detection and diagnosis are evaluated using the Case Western Reserve University experimental dataset to determine its robustness and performance. Demodulation techniques and machine learning algorithms are also contrasted for their ability to identify and diagnose the fault. A VMD filter and 1D-CNN approach for monitoring bearing fault are clearly promising, according to the results obtained from the experiments.

14:05 ***Preprocessing Trajectory Learning Techniques For Robots: A comparative study***

Asmaa A. E. Osman (Faculty of Computers and Artificial Intelligence Cairo University, Egypt); Reda Abd Elwahab and Mahmoud Shoman (Cairo University, Egypt); Mohamed A. Wahby Shalaby (Cairo University & Smart Engineering Systems Research Center Nile University, Egypt)

Robots are increasingly used in numerous life applications. Therefore, humans are looking forward for creating smart and more productive robots. Developing such robots necessitates the programming of the robot. Hence, the machine learning approaches are widely employed to accomplish this objective successfully. Programming the robot can be applied by demonstration such that the skills are transferred to robots by providing examples of the required behavior. Learning a skill at a trajectory level involves modeling set of demonstrated trajectories and retrieving a generalized representation of the set suitable for reproduction by a robot learner. Traditionally, modeling the demonstrated data was applied on discrete data which would result in learning outcome distortions. In order to overcome such distortions, a preprocessing stage of the raw data is needed. Recently, preprocessing trajectory learning techniques have been proposed. It is found that these techniques can increase the accuracy of the generalized trajectory. In this paper, a comparative study is conducted between these preprocessing trajectory learning techniques in terms of accuracy and the computational cost. It is shown that the generalized trajectory generated by applying the preprocessing learning techniques can increase the accuracy at reduced computational costs in comparisons to related work.

14:25 ***Measurement of Railway Sleepers Spacing Using Mask R-CNN***

Emre Güçlü (Fırat University, Turkey); Ilhan Aydin (Firat University, Turkey & Firat, Turkey); Erhan Akin (Firat University, Turkey)

Railway sleepers are key components that are critical to ensuring safety in the railway track system. Railway sleepers are designed to carry wheel loads from the rails to the ground. This article presents a study to determine the spacing between sleepers. For the detection of sleepers, a model based on Mask R-CNN was developed and used to determine the spaces between sleepers. First, images from the actual railway site were collected by drone and labeled. Next, a model with a Mask R-CNN was built to detect the sleepers. In order to determine the sleepers boundaries, the sum of the pixel density of the binary mask obtained with Mask R-CNN was obtained. Sleepers spans were determined by measuring the distance between the obtained sleepers borders. As a result of the experiment, an accuracy rate of 99.73% was obtained. This work is valuable for detecting sleeper deficiencies and inspecting existing rails, significantly reducing costs compared to traditional methods.

14:45 ***Regression-Based Position Detection for Navigation using IMU***

Orhan Yaman, Beyda Tasar and Oguz Yakut (Firat University, Turkey)

In this study, IMU (Inertial Measurement Unit) data was used and GPS (Global Positioning System) position detection was performed. Fine Tree Regression has been used for position detection. A new dataset has been collected to test the proposed method. The development board has been designed with Arduino mega, Altimu-10 IMU sensor, GPS module, and SD card module. This development board is fixed on an automobile. During the movement of the car, altitude, accelerometer, gyro, magnetometer, latitude, and longitude data have been collected. Obtained data have been used together with Fine Tree Regression. Both latitude and longitude regression results are calculated. Because of regression, latitude, and longitude results have been calculated according to the car's altitude, accelerometer, gyro, and magnetometer data. 0.97 R-Squared for latitude

and 0.98 R-Squared for longitude have been computed with Fine Tree Regression. Obtained results have been compared with other regression models.

15:05 ***EEG Signals Based Motor Imagery and Movement Classification for BCI Applications***

Beyda Tasar and Orhan Yaman (Firat University, Turkey)

The Brain-Computer Interface (BCI) is a system that uses the neural activity data of the brain to control the devices in the outside world, in other words, to communicate. BCI studies of wearable sensor EEG sensor technology have gained momentum. In this study, in order to enable the use of electroencephalogram (EEG) patterns in BCI applications, the extraction of statistical-based features, the selection of the most effective features with the NCA method, and the determination of the type of motion request with classification algorithms were carried out. The PhysioNet EEG Motor Movement/Imagery dataset, which is a large-scale movement EEG dataset (108 subjects, 3,145,160 EEG recordings), was used. For six different types of motion and imaging, 30 statistical features were calculated (960 in total) for each channel of the EEG signals received from the 48-channel EEG sensor head, and the most effective 120 features were selected with NCA. The selected feature set is given as input to the LD, NB, SVM classification algorithms. The test accuracy success of the models is 91.18%, 95.41%, and 99.51%, respectively. These results show that the proposed method will give successful results in BCI applications.

PS7-6: PS7-6

Chairs: Moustafa Mohamad Kurdi (City University & Engineering and Information Technology, Lebanon), Krit Sittivangkul (Mae Fah Luang University, Thailand)

13:45 ***Trajectory and Motion for Agricultural Robot***

Moustafa Mohamad Kurdi (City University & Engineering and Information Technology, Lebanon); Imad Elzein (International University of Beirut, Lebanon)

This paper provides a detailed analysis of the trajectory and motion planning for ground Agricultural-Robot. the approach is based on: i) scanning and analysis of the selected area; ii) obstacle avoidance behavior; and iii) position and image processing system of Agricultural-Robot. The purpose of this paper is to present the goal-directed robot path planning in the presence of uncertainties and obstacles. The proposed concept has been validated on a simulation test bed that is constructed upon a model of typical Agricultural-Robot and race results that clearly demonstrate the effectiveness of the planning system.

14:05 ***Implementing a TSP Path Controller for Autonomous Robot***

Moustafa Mohamad Kurdi (City University & Engineering and Information Technology, Lebanon); Imad Elzein (International University of Beirut, Lebanon)

In this paper the cooperation of hybrid robots with digital map is presented. Based on ground robot Fuzzy Controller is designed to achieve the desired navigation accuracy, to estimate the optimized path. The approach combines Path Controller, Travel Sales Problem and Fuzzy Controller. A combined algorithm is demonstrated on multiple inputs to achieve higher accuracy and efficiency.

14:25 ***Perception and Clustering Analysis towards Cryptocurrency Investment Decision using Machine Learning***

Krit Sittivangkul, Tosporn Arreeras and Sunida Tiwong (Mae Fah Luang University, Thailand)

The objectives of this research are 1) to study the relationship of people interested in investing in cryptocurrencies; 2) to identify people interested in cryptocurrencies. This research study is quantitative research by survey research using an online questionnaire data collection method of 402 respondents. The research results found that Most of them are Generation Z people interested in investing in cryptocurrencies and low to middle-income groups, most of whom are interested in BTC and ETH, the well-known crypto-currency groups. The analysis was then divided by K-Means Clustering analysis into three groups, namely "Not interested in cryptocurrencies", "Moderate-interest" and "Risk-takers" that interested in investing in cryptocurrencies. The

last group has a selection to invest in a variety of cryptocurrencies, especially SOL, BNB, and ADA, which are smart contract coins.

14:45 ***A YOLOR Based Visual Detection of Amateur Drones***

Ilhan Aydin (Firat University, Turkey & Firat, Turkey); Emrullah Kizilay (Firat University, Turkey)

The popularity of Unmanned Aerial Vehicles (UAVs) has increased considerably among today's technologies. In addition to the increase in the use of UAVs, their development as a model has shown a rapid acceleration. Especially in the field of defense technologies, the production of special UAVs is considered as a new power besides the existing systems. It is foreseen that UAVs will make a difference in terms of autonomous capability, their usage areas will become widespread in the recent years and they will operate in many areas. This situation brings many studies in the field of UAV. The proliferation of UAVs brings with it a number of problems. In accordance with current laws and regulations, UAVs are used in certain standards and areas. However, contrary to this situation, UAVs are also used outside of laws and regulations. Therefore, detecting UAVs in this situation is very important task. In this study, the recently released YOLOR was used to detect UAVs. As a result of the experiments, it has been experimentally proven that the YOLOR model has a 95.9% success rate and is better than other object detection models.

15:05 ***On Campus Student Recruitment Analysis using Machine Learning***

Varsha T and Yamuna C Shekar (M S Ramaiah University of Applied Sciences, India); Sahana Shankar (Ramaiah University of Applied Science, India); Naresh E (M S Ramaiah Institute of Technology, India)

College is one of the non-profit company which aims to provide support to all student needs, to develop science especially in academic field. So, providing good placement assistance service has become one of the benchmark for a qualitative college environment. Now a days, in this pandemic hit world, most of the IT companies are recruiting students through online mode which would be burdensome for the college as well as for the company to shortlist the students based on the companies requirements for various roles. It takes a lot of manual effort to complete the recruitment process as college contain thousands of students. So, in order to overcome this problem, a new technique for evaluating job applications in online recruitment systems, by applying different machine learning algorithms to solve the problem is proposed. An application is being implemented in the form of a prototype system, whose functionality is manifested and accessed in a real-life recruitment scenario. A system can be proposed where the machine takes the student's performance as well as company's requirements as input, analyze both and provide information whether the student should be shortlisted for interview. This paper proposes an automated solution for the student recruitment analysis using machine learning techniques.

PS7-9: PS7-9

Chair: Sawsan Hilal (University of Bahrain, Bahrain)

13:45 ***Rail Tracking and Detection with Drone in Gazebo Environment***

Mehmet Sevi (Muş Alparslan University, Turkey); Ilhan Aydin (Firat University, Turkey & Firat, Turkey)

Rail transport is considered one of the safest modes of transport. Along with the development of technology, significant developments have been observed in railway transportation over the years. With the increasing railway line, the demand for railway transportation is increasing day by day. The number of passengers using railway transportation has also increased in this context. With this intensity, the damage to the railway line increases. In ensuring the safety of railway transport, methods based on deep learning have become important to ensure railway safety. In order for the railway line to provide healthy service, the monitoring of the railway line should be done regularly. Traditional rail monitoring services require different vehicles. Today, besides conventional vehicles, drones are used for the monitoring of the railway line. Experimenting with drones in the real environment can be difficult and costly. It is always more advantageous to run the codes that will run on the drone first in a simulation environment to save time. In this study, a drone-based system that autonomously tracks and detects railway tracks is proposed as an alternative to traditional methods. The proposed method detects the rails with the semantic segmentation method and follows the rails with its front camera. The proposed method was developed in the Gazebo environment. The general purpose of the study is to record the rail images with the drone camera that follows the railway autonomously. In this way, drone

experiments to be carried out in the real railway environment will be completed in a shorter time.

14:05 ***UReST: A Knowledge Based Usability Requirements Specification Support Tool***

Chian Wen Too, Meei Hao Hoo, Kok Chin Khor and Whee Yen Wong (Universiti Tunku Abdul Rahman, Malaysia)

Despite the importance of identifying and specifying a complete set of usability requirements in the early stage of software development, there are few methods and tools that adequately support the requirement engineers in the process of eliciting and specifying relevant usability requirements. This paper presents UReST, a knowledge-based usability requirement support tool aimed at empowering the requirement engineer with knowledge repository and predefined structured template that aids in performing their task to capture and specify relevant usability requirements during the requirement gathering. A controlled experiment and usability study have been conducted to evaluate the effectiveness of the UReST in supporting the requirement engineer to perform usability requirement specification activities. The results from both experiment and usability study concluded that UReST could support the requirement engineer to identify and generate more usability requirements relevant to a domain functionality. Nevertheless, the developed UReST also received high acceptance level of usefulness and ease of use in the usability study.

14:25 ***Bleeding Region Segmentation in Wireless Capsule Endoscopy Images by a Deep Learning Model: Initial Learning Rate and Epoch Optimization***

Ratchaneekorn Duangchai and Chanakarn Toonmana (Srinakharinwirot University, Thailand); Kawee Numpacharoen (Georgia Institute of Technology, USA); Amber Charoen (Brown University, USA); Nuwee Wiwatwattana and Theekapun Charoenpong (Srinakharinwirot University, Thailand)

Gastrointestinal bleeding is a common symptom in gastrointestinal tract, which can lead to serious conditions. The neural network algorithm is used to segment the bleeding region in Wireless Capsule Endoscope image. Initial variable is also importance for performance of the algorithm. In this paper, we proposed a bleeding segmentation method by using a deep neural network algorithm. Variables which effect on performance of the deep learning technique in training process are studied. Initial learn rate is varied from 0.009, 0.006, 0.003, 0.06, and 0.09. Epoch is varied from 1,000 to 10,000 iterations. To test the performance of segmentation method, 48 Image in KID dataset were used in the experiment. DICE rate of is 90.82%, and 69.91% for training data and test data, respectively. Based on the experiment, initial learning rate, and number of epoch effects to the performance of the method.

14:45 ***Machine Vision System of Emergency Vehicle Detection System Using Deep Transfer Learning***

Kim Carol D. Maligalig (Batangas State University, Philippines)

Accidents can happen at any time and in any location, so emergency vehicles are essential in any emergency or life-threatening circumstance. However due to lots of people owning cars, traffic jam is a severe problem in many cities. These traffic jams have an impact on emergency vehicles, particularly ambulances, as well as other vehicles such as fire trucks and police cars. The purpose of this research is to develop an emergency vehicle detection system that will assist law enforcement in mandating traffic when emergency vehicles are on the road. The researcher use deep learning, specifically YOLov3 technique in developing the detection system wherein it will utilize CNN in implementing. The highest mAP value out of 25 models was obtained by the detection system is 98.78% by model 21.

15:05 ***A Transfer Learning-Based System of Pothole Detection in Roads through Deep Convolutional Neural Networks***

Jhon Michael C Manalo (Batangas State University, Philippines)

Pothole detection is a critical role in defining optimal road management solutions and maintenance. In this study, the researcher used deep learning and yolov3 to create a pothole detection system. A deep learning algorithm called YOLOv3 is used to develop a model that can successfully identify potholes. The detection model had an average precision of 95.43 percent, and identified potholes had accuracies ranging from 33 percent to 69 percent, which is to be anticipated given the numerous various forms and sizes of potholes

PS7-7: PS7-7

Chairs: Ling Suan Choo (University of Bahrain, Bahrain), Kiki Khoifin (Mae Fah Luang University, Thailand), Nattapan Kongbuamai (Mae Fah Luang University, Thailand)

13:45 ***Predicting Customer's Subscription Response to Bank Telemarketing Campaign Based on Machine learning Algorithms***

Saad Ebrahim Saeed, Mustafa Hammad and Abdulla Alqaddoumi (University of Bahrain, Bahrain)

The cut-throat competition in the banking industry has led to the paradigm shift of banking strategies from conventional methods towards state-of-the-art data mining and machine learning techniques. Over the years, the banking industry has shifted from personal individual visits towards telemarketing which is an effective and cheaper way of carrying out marketing campaigns through telecommunication. However, the banks are always seeking new methods and techniques to help them advertise the selected products to the interested customers in order to minimize the time and cost spent on marketing with a maximum number of customers subscribing to the new products, consequently increasing their profit value. This paper attempts to provide the banks with a data mining solution to predict the customer's response to the telemarketing campaign using an ensemble classifier based on hybrid machine learning models. A thorough Exploratory Data Analysis (EDA) is also performed to give useful insights about the customer's attributes leading to a higher subscription rate. Our ensemble classifier caters to the class imbalance problem in the dataset and predicts the customer's response with an accuracy of 95.6%.

14:05 ***Action Research on Online Business Performance of a Chinese Sport Equipment Company: A Conceptual Paper***

Poh-Chuin Teo and Theresa C.F. Ho (Universiti Teknologi Malaysia, Malaysia); Ling Suan Choo (University of Bahrain, Bahrain); Zeng Shuohan (Fingerprint Cards AB, China); Beni Widarman Yus Kelana (Universiti Teknologi Malaysia, Malaysia & Azman Hashim International Business School (AHIBS), Indonesia)

This conceptual paper proposes an action research project focuses on improving Company S online business performance, with the primary objectives of increasing online sales and improving customer satisfaction. Aim to identify critical aspects of e-commerce and feasible online marketing strategies that can increase sales for companies considering entering e-commerce, particularly inexperienced newcomers. The study proposed a mixed-method research, whereby data has been proposed to be collected via interviews and surveys using both qualitative and quantitative methods. Data triangulation has been recommended in analyzing the data and developing potential intervention strategy, which would help in improve the problem that is facing by the studied company.

14:25 ***Improving Purchase to Pay Process Efficiency with RPA using Fuzzy Miner Algorithm in Process Mining***

Rizal Broer Bahaweres (UIN Jakarta - IPB University, Indonesia & Computer-iEEE, Indonesia); Habib Amna (UIN Syarif Hidayatullah Jakarta & UIN, Indonesia); Desi Nurnaningsih (University of Muhammadiyah Tangerang, Indonesia)

Robotic process automation is a solution for automating human digital interactions to increase efficiency and reduce costs. We analyze the possible solutions of Robotic Process Automation (RPA) in the purchase to pay process dataset to measuring efficiency using process mining methods. We investigate 10% of 1,595,923 event logs and found that there was still a lack of automation in the purchase to pay process. Process mining will examine repetitive activities in purchase to pay process and discover analysis of vendors in a month, it was found that the use of automation was 4.5%, 3.72% and even 0% which should have been a repetitive process that could have been replaced with robots. The author analyzes purchase to pay data from the large multinational coating and paint companies in the Netherlands from BPIC 2019. The main motivation is to make the purchase to pay process more efficient so as to improve company performance by utilizing the application of RPA in terms of productivity, cost, speeds and error reduction.

14:45 ***An investigation of factors affecting purchasing decision of premium coffee in Singapore***

Nattaphon Rangsaritvorakarn (Mae Fah Luang University, Thailand); Suthep Nimsai (Mahidol

University, Thailand)

This study aimed to analyze the customer purchasing decision within premium arabica coffee shops in Singapore. The sampling locations were Singapore. The population used in the study consisted of 312 valid responses from 16 coffee shops. The data was obtained by using questionnaires which consists of 17 questions according to marketing mix concepts, including four product items, three pricing items, four-place items, three promotion items, and three people items. The data analysis was used the grey theory system with GM(0, n) which estimates the decision of an uncertain system by examining the relationship between model construction and discrete data. The results of the study revealed five factors of marketing mix were impacted customer purchasing decisions significantly. The product elements weighting is 0.3527. Follow by, the price (0.2712), the place (0.1581), the promotion (0.1296), and the people (0.0897). The study found that Singaporean focus on premium coffee beans that have a unique flavor. Especially storytelling for each country of origin where to plant premium coffee is even more interesting and gives a new experience different from instant coffee. In addition, consumers are also willing to pay for what's right for the price even premium coffee has a high price.

15:05 ***A comprehensive study of Natural language processing Techniques Based on Big Data***

Mouad Banane (University of Hassan II, Morocco); Allae Erraissi (Chouaib Doukkali University, El Jadida, Morocco)

Natural Language Processing (NLP) is a branch of artificial intelligence that focuses on understanding human language as it is written and/or spoken. To do this, specific computer programs are developed. NLP algorithms practice different syntactic and semantic analyzes to evaluate the meaning of a sentence according to grammatical rules provided beforehand, by operating a segmentation of words and groups of words or by studying the grammar of a complete sentence. To determine the meaning and the context, they compare the text in real time with all the databases at their disposal. Needing large amounts of data to identify relevant correlations On the other hand, Big Data offers a revolution in massive data management systems thanks to a set of evolving technologies like NoSQL and, Spark. In this paper, we present a comprehensive study of natural language processing (NLP) techniques based on Big Data technologies, then we compare these NLP techniques in order to show the advantage of using Big Data for the management of massive NLP data

PS7-5: PS7-5

Chair: Teeris Thepchalerm (Mae Fah Luang University, Thailand)

13:45 ***Consumer Decision Aid and Purchase Perception for In-store Shopping***

Siti Aqilah Matajudin, Wardah Hakimah Sumardi and Muhammad Anshari (Universiti Brunei Darussalam, Brunei Darussalam)

Purchase abandonment is a common problem for businesses since it translates to loss of sales and loss of potential customers. A review of the literature suggests that there is yet a study on in-depth exploration of purchase abandonment in in-store shopping. Hence, this study aims to examine the nature of product abandonment in in-store shopping, explore the factors that influence purchase abandonment in in-store shopping, and understand how the difference in the features of product categories affect purchase abandonment in in-store shopping. This qualitative study involved in-depth interview with consumers and the data was thematically analysed. The findings of this study provided new definitions for purchase abandonment in in-store shopping where the definitions differ in terms of the formation of purchase intention, and uncovered additional factors that lead to purchase abandonment in in-store shopping that were not identified in previous studies. This study also revealed how product abandonment differs across product categories where specialty products are more likely to be abandoned than convenience products and shopping products due to the perception that specialty products are usually not a 'need' product and that specialty products are expensive.

14:05 ***Factors Influencing the Transition of Entrepreneurial University***

Tippawan Meepung (King Mongkut's University of Technology North Bangkok (KMUTNB) Bangkok, Thailand); Prachyanun Nilsook (Faculty of Industrial Education, Thailand); Panita Wannapiroon (King Mongkut's University of Technology North Bangkok, Thailand)

Population is the personnel working in higher education institutions in Thailand, The research methodology is survey research using quantitative research methods. A descriptive research methodology was used, and questionnaires were used as a tool to collect data using a sample of 300 higher education personnel. Sampling by Cluster Sampling. used statistics on Frequency distribution of data by percentage Arithmetic mean standard deviation inferential statistical analysis. Statistics were used for analysis with Confirmatory Factor Analysis (CFA). Which found that the relative chi-square value (CMIN/DF) is equal to 1.236, Compliance Index (CFI) is equal to 0.998 which greater than 0.90 and CFI value (Comparative. Fit index), the measure of the suitability level based on the criteria (NFI) is equal to 0.992, which is greater than 0.90, the roof index of the square mean of estimation of the error (RMSEA) is equal to 0.028 which is less than 0.08.

14:25 *Performance Evaluation of Time Series Forecasting Methods in The Stock Market: A Comparative Study*

Fares Abdulhafidh Dael and Uğur Yavuz (Ataturk University, Turkey); Akram A. Almohammedi (South Ural State University, Malaysia)

Stock market forecasting is a challenging area for many researchers and investors since it is a stochastic environment. The aim of this paper is to apply some of the existing forecasting methods to find the optimal method that gives high accuracy based on the given data. IBM stock market dataset has been used for this paper. Ten years of numerical collected data have been applied for training and testing. Eight forecasting methods have been tested which are Linear Regression, Multilayer Perceptron, RBF Regressor, SMO reg, Bagging, Random Sub Space, Timeseries Holt-Winters, and Random Forest. Python and Weka tools have been used for processing, analyzing, and testing. SMO regression has shown an excellent performance compared to the other applied methods in IBM stock market forecasting. The outcome of this paper will help the investors to take the right decision for selling, holding, or buying in the stock market.

14:45 *The Role of Financial Decision-Making on Energy Consumption in ASEAN Countries*

Aliya Isiksal (Near East University, Faculty of Economics and Administrative Sciences, Turkey); Ala Fathi (Near East University, Turkey)

By using panel data from 1998 to 2018, this study examines the impact of five important factors influencing sustainable energy use in ASEAN countries, including technological innovation, financial expansion, economic freedom, pollution of the environment, and per capita GDP. The PMG-ARDL analysis method was applied to generate a dynamic heterogeneous panel to test the panel data. Then, to establish successful policies, the Dumitrescu-Hurlin panel causality test was applied. The results show that fiscal expansion has a significant impact on reducing the use of sustainable energy. Moreover, environmental degradation, economic freedom, and real GDP per capita have a negative relationship to the use of sustainable energy, although there is a positive relationship between innovation and sustainable energy. According to the findings, ASEAN countries have to strengthen measures that encourage sustainable energy projects to maintain their economic strength for a long period. They will also be able to prevent future economic crises and will have alternative energy sources to draw on in case conventional energy runs out.

15:05 *A study of heuristics and cognitive biases affecting the decision-making of inventory management for drugstores*

Narucha Tanaiutchawoot (Lecturer in University & Manager of Science Park in Technopolis, Thailand)

Heuristics have a significant impact on many entrepreneurs' decisions since they typically make decisions under uncertain conditions, time constraints, and little information. Inventory management is one task that necessitates several judgments. Overstock or inadequate supply to meet demand can result from an imbalance in selling and ordering. In inventory management, heuristic decisions are unavoidable, which can lead to cognitive biases in decision-making. The purpose of this study is to investigate and identify eight heuristics and cognitive biases that may occur in the decision-making process of a drugstore entrepreneur regarding inventory management. Overconfidence bias, planning fallacy, representativeness heuristic, regret and counterfactual thinking, escalation of commitment, illusion of control, anchoring heuristic, and the affect heuristic are all typical cognitive biases in entrepreneurial decision-making. The experiments were carried out through face-to-face interviews with 60 participants who have been running the firm for more than a year. The findings revealed that entrepreneurs occasionally make decisions based on heuristics and cognitive biases. The affect heuristic, the planning fallacy, and overconfidence all emerge more frequently than others. Because entrepreneurs have greater knowledge and experience, regret and counterfactual reasoning, as well as escalation of commitment, rarely influence their inventory management decision-making. These findings show that some heuristics may be addressed as knowledge and experience grow. However, it is not required to avoid them because they

may occasionally be advantageous in certain conditions, such as responding to client needs on time even if the aim exceeds the plans.

PS7-8: PS7-8

Chair: Ayman Al-khazraji (University of Bahrain, Bahrain)

13:45 ***Investigating the critical human behaviour elements and their implications for knowledge management systems: A Literature Review***

Wan Noor Aziela Isma (Universiti Teknologi Mara, Kota Bharu); Mohd Nasir Ismail (Universiti Teknologi MARA Cawangan Kelantan, Malaysia); Mohamad Rahimi Mohamad Rosman (Universiti Teknologi MARA, Malaysia)

A knowledge management system is required to ultimately enable an organization to realize its knowledge management objectives. The organization has several issues with this system, including deciding whether to adopt it or not, and, in the latter case, whether users would accept working with it. This study aims to determine the impact of human behavioural factors (HBFs), such as emotion, on group processes, as well as the impact of these processes on individuals' attitudes and emotions, character, values and beliefs, perspective and motivation, and knowledge management system-cycles (KMS-Cs). In addition, knowledge management systems are adopted at both the organizational and individual levels. Many factors influence an organization's decision to adopt knowledge management systems, including corporate culture and top management support. Various circumstances also influence users' acceptance, and naturally, the amount of acceptance affects the knowledge management system's effectiveness. Although an effective knowledge management system (KMS) is a critical strategy for organizations to obtain sustained competitive advantages, little research has been undertaken to determine what factors contribute to the success of KMS.

14:05 ***A Review: Female's Career Advancement to An Executive Position in The Service Industry***

Pinpinut Phatthanaaoran, Chanakarn Kongsomrarn, Chutima Sangkaho, Arisa Promlar and Tosporn Arreeras (Mae Fah Luang University, Thailand)

In the 21st century, global females have faced unequal promotion because of gender. Even they are qualified or deserve to be promoted. Compared with males, they are offered and engaged in both authorizations and opportunities in their occupations. This phenomenon is called the glass ceiling used as a phase for comparison. It has been an assemblage of masculine norms in organizations. Most articles and research in the glass ceiling areas concern an overview. Interestingly, the service industry that is outstanding in female employment can also be an incident of the glass ceiling. This research aims to understand problems and solutions better to offer a new approach for future research in the field. For methodology, bibliometric and categorization are chosen to analyze and review 110 existing pieces of research about women and executive positions in the service sector. As a result, it will provide helpful information for the researchers interested in female vertical segregation and the organization in the service industry that tries to develop a corporate social responsibility strategy for female employees and gender equality.

14:25 ***Critical Review of Design Considerations in Forming a Cloud Infrastructure for SMEs***

Lai Yen Ling (Asia Pacific University (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Qusay Al Maatouk (Staffordshire University, United Kingdom (Great Britain))

Cloud based solutions provide a robust and flexible approach to support and improve the digital businesses for better success. This study is focused on the need analysis for the Small-to-Medium Enterprise (SME) companies for the perspective of finding the most suitable and appropriate cloud strategies to obtain the best outcome. Various aspects included in the design of the cloud solution such as scalability, cost-effectiveness, performance and efficiency are discussed. The essential components of the cloud infrastructure framework such as applications, services and orchestration are also explored. Finally, authors have proposed an infrastructural framework focusing on the virtual layer, control layer and orchestration layer of the Cloud.

14:45 ***Prioritization of the Potential Sectors for CO2 Emission Reduction based on International Policies: A Case of Turkey***

Fatma Gündoğdu (National Defence University, Turkey); Esra Ilbahar, Ali Karasan, İhsan Kaya and Bestami Özkaya (Yildiz Technical University, Turkey)

Day by day, with the increment in the world's temperature, the ways of reducing greenhouse gas emissions (GHGE) have been started to be investigated more to slow down this process. To create a sustainable action plan and a road map, the governments and the international agencies have been started to take steps. Based on this aim, United Nations (UN) determined the most effective factors on GHGE with respect to their possible reduction amounts to take action. On the other hand, the world bank identified related indicators of GHGE for the governments to create their individual agendas to work for a sustainable and affordable environment and city plans. This study proposes an integrated decision-making methodology consisting of spherical fuzzy TOPSIS and fuzzy inference system (FIS) for prioritizing the pre-determined sectors with respect to CO2 emission reduction based on the climate change indicators . The spherical fuzzy TOPSIS method is used to obtain input data of the FIS by considering the distance to ideal solutions of the evaluated sectors for Turkey. Through the application, it is obtained that Transport, Energy, and Industry sectors are determined as the most effective against the CO2 reduction based on the current ecosystem of Turkey. Since Turkey is a developing country and one of the G20 countries, its current focus areas are mainly increasing productivity considering high-level technologies, the supplement of inadequate and sufficient energy for both the industry and the householders, and investments in infrastructure for a better and faster transformation. Considering these aspects, the country's primary investments areas are on industry, energy, and transportation to reach a better place considering the annual gross domestic product. Therefore, the obtained results are quite applicable and meaningful, and this study can be a good starting point for further actions.

15:05 ***An IoT-Based Framework to Support Decision Making Process Using Quality Function Deployment***

Venu Parameswaranpillai and Ayman Al-khazraji (University of Bahrain, Bahrain)

This paper proposes a framework to incorporate a smart module to a refrigerator capable to collect product data from the items kept inside for refrigeration. This data is collected with the help of smart devices and provide an interface for the users to input product feature rating or innovative requirements to the company involved in making the product. The customer input travel to a QFD interface that uses modern algorithms to act as a dynamic deployment platform to support the decision makers to initiate the product improvement activities. This framework can be implemented in smart refrigerators to help the customers understand the product under use, compare the one they are consuming or using with similar other products, recommend product improvement features and get in touch with the company to continuously push the feedback. The companies could make use of this platform to customize their product to suit customers of diverse nature, tackle regional competitions and always stay flexible to make necessary product improvement that meets the customer needs.

Friday, March 25 15:25 - 15:35 (Asia/Bangkok)

Break: Coffee Break

Friday, March 25 15:35 - 17:15 (Asia/Bangkok)

PS8-4: PS8-4

Chair: Meryem Masmoudi (University of Bahrain, Bahrain)

15:35 ***Compact Tag Antenna Loaded with Metamaterial for IoT-Based Personal Healthcare in Hospital Services***

Abdessalam EL yassini (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco); Mohammed

ali Jallal (Cadi Ayyad University Faculty of Sciences Semlalia, Morocco); Saida Ibnyaich (Faculty of Sciences Semlalia, Cadi Ayyad University Marrakesh, Morocco); Zakaria El Ouadi (Cadi Ayyad University, Morocco); Abdelouaheb Zeroual (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco)

The Internet of Things (IoT) technologies are frequently used. Due to the wireless transmission and receiving of the information between each IoT system and distant application, confidentiality and security of data. This paper progresses through the study of radio frequency identification (RFID), which is an important technology and one of the more demanding technologies in the recent wireless systems. A compact multi-band tag has been suggested in this research work for RFID and IoT-based personal healthcare in hospital application. An unit cell of the metamaterial and meander lines are used to achieve multiband operating. The suggested tag has been printed on a low-cost FR4 substrate with εr=4.3, tan δ=0.022, and physical size of 16×23×1.6 mm3. The obtained results have shown that the suggested tag antenna provides significant impedance matching in the operational bands (2.3-2.5 GHz) and (5.78-6 GHz), correspondent of the central frequencies of 2.45 GHz and 5.8 GHz. This tag antenna provides a gain of 2.14 dB and 3.22 dB at both resonant frequencies. Furthermore, this antenna has excellent results and supports two bands of operation for communication devices in the hospital services.

15:55 ***Forecasting FSW Material's Behavior using an Artificial Intelligence-Driven Approach***

Abdelhakim Dorbane (Ain Temouchent University, Algeria); Harrou Fouzi (King Abdullah University of Science and Technology & KAUST, Saudi Arabia); Ying Sun (KAUST, Saudi Arabia)

An effective data-driven approach was developed to forecast the mechanical behavior of an aluminum alloy, namely Al6061-T6, in the case of friction stir welding. Gated current unit (GRU), a deep learning model, was investigated in this study. This is the first study introducing the GRU model to effectively forecast a material's stress-strain curves. The major features of the GRU consist in its capacity to capture time dependency in time-series data and its flexibility as it does not require assumptions of the data distribution. Actual data was collected by conducting uniaxial tensile testing on the base material, and friction stirred welded, both tested at a deformation speed of 10-3s-1. Forecasting tensile tests results showed promising and accurate results of the GRU-driven forecaster.

16:15 ***Outer weighted graph coloring-aided power control for addressing the pilot contamination issue across cellular massive MIMO systems***

Abdelfettah Belhabib (Cadi Ayyad University, Morocco); Zeroual Abdelouhab (cadi ayyad University FSSM, Morocco)

Massive multiple-input multiple-output technology is one of the main pillars of upcoming 5G systems; however, this technology is falling apart due to the problem of pilot contamination. To address this problem, a new decontamination strategy is proposed in this paper. This strategy is based on the exploitation of available information to separate the user equipments (UE) inside the cells into two groups. The first group includes UE that roams around their base station (BS), which explains their name: internal user equipment (IUE), while the other UEs are called peripheral user equipment (PUE). After being separated, the IUEs in each cell are arbitrarily forced to use the same pilots as those in all cells, while the process of assigning pilots to the PUEs is managed using a graph coloring strategy. Therefore, a control power process is employed to improve the QoS of each UE based on its channel condition. Simulation results are used to assess the capabilities of our proposed strategy.

16:35 ***Design and Computation Aid of Command Gains for the Position Control of Manipulator Robots***

Sahar Jenhani (Higher Institute of Information and Communication Technologies, Tunisia); Hassène Gritli (National Engineering School of Tunis & Higher Institute of Information and Communication Technologies, Tunisia); Giuseppe Carbone (University of Calabria, Italy)

There are different types of commands dedicated to solving the position control problem of robotic systems in engineering applications. Such control problem consists in moving the robot from its actual position to a desired one. In this work, we adopt three different types of control laws to control the position of manipulator robots and develop conditions aiding to the computation of the gains of these controllers. First, we adopt an affine PD-based control law designed via the approximated linear dynamic model. Furthermore, we adopt the PD controller with gravity compensation and the PD controller with desired gravity

compensation. Moreover, we use the Lyapunov method and the contraction mapping to determine the condition on the feedback gains ensuring the stabilization of the controlled manipulator robot at the desired position. Finally, as an illustrative example, we adopt a manipulator robot with two degrees of freedom to reveal the effectiveness of different design conditions in solving the position control problem.

16:55 ***A Review On Water Resources Management Modeling Using Operational Research and Decision Aid Sciences***

Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia); Ahmed Frikha (Université de Sfax (ISGI), Tunisia & Institut Supérieur de Gestion Industrielle de Sfax, Tunisia); Francisco Silva Silva (CERIS, Portugal)

General objectives of water resources management models are to optimize the utilization of available water resources to meet the demand of as many users as possible. There are different operational research and decision aid (ORDA) sciences of obtaining an optimal allocation or selection of available water to one or various user groups. In this paper, a background of ORDA are presented with different applications in the management of water resources

PS8-5: PS8-5

Chair: Tosporn Arreeras (Mae Fah Luang University, Thailand)

15:35 ***Comparative study between EMD, VMD, SAGE, CLEAN, and ESPRIT-TLS algorithms for real-time fault bearing recognizing detection in induction machines***

Pascal Dore (LABTIC-ENSAT, Morocco); Saad Chakkor (University of Abdelmalek Essaâdi & LabTIC ENSA de Tanger, Morocco); Ahmed El Oualkadi (Abdelmalek Essaidi Unversity, Morocco)

Real-time monitoring of electromechanical faults is today at the heart of scientific research in the industrial sector. Indeed, the idea of this work is therefore to show, through a comparison based on performance indicators (precision, calculation time, occupied memory size, and convergence), which the processing algorithm of the signal is more robust in detecting the spectral characteristics of a fault using the MCSA method (Machine Current Signature Analysis). To do this, we used indicators such as NMSE to calculate the estimation errors on the estimated frequencies of the faults by these algorithms. The MATLAB simulations of the detection of a bearing fault, known by its spectral characteristics (two, four and six harmonics) and injected into a stator current signal with a variable level according to SNR, showed that the ESPRIT-TLS method exceeds the VMD, EMD, SAGE, and CLEAN algorithms and occupies the first place in the precise discrimination of this type of fault, especially when its amplitudes are low and even when close frequencies are used.

15:55 ***Pilot Sequence-based Channel Estimation in Massive MIMO wireless communication networks under strong Pilot Contamination***

Jamal Amadid and Zakaria El Ouadi (Cadi Ayyad University, Morocco); Layla Wakrim (ISGA, Marrakech, Morocco); Asma Khabba and Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

This work provides a straightforward channel estimator to overcome an unrealistic property provided by Minimum Mean Square Error Estimator (MMSEE) for Multi-Cell (MC) Massive Multiple-Input Multiple-Output (M-MIMO) systems operating under Time-Division Duplex (TDD) protocol. Besides, this work is in purpose to study and analyze the current ideal Least-Squares Estimator (LSE), the current ideal MMSEE, and the Maximum Likelihood Estimator (MLE) under various circumstances and considering under Pilot Contamination (PC) problems. This work compared and evaluate the performance of the studied estimators using the metric Mean Square Error (MSE). The traditional LSE provides the worst performance under a high interference level since it is considerably affected by PC. In spite of the greater accuracy achieved by MMSEE in many studies in the literature. However, the MMSEE is relying on an unrealistic assumption, which can be explained by the complete knowledge of among cell large-scale fading (LSF) coefficients as an unrealistic hypothesis in practical use. The suggested estimator (i.e., the MLE) is introduced to overcome the unusable property on which the MMSEE is based. Besides, the MLE is introduced to provides higher performance than LSE. Furthermore, we investigate a scenario of LSF coefficient (i.e., a LSF depends on the distance at which the user is

located from its serving Base Station (BS)), wherewith we assert our analysis. An analytical, simulated, and approximated, results are provided for MLE to affirm our study, whereas analytical and simulated results are given for both LSE and MMSEE to assert the presented theoretical expressions

16:15 ***Performance of Massive MIMO Systems Considering Three Dimensional Array-based Spatially Correlated Channel***

Jamal Amadid and Asma Khabba (Cadi Ayyad University, Morocco); Layla Wakrim (ISGA, Marrakech, Morocco); Zakaria El Ouadi and Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

This work deal with the uplink phase of the pilot-based channel estimation (CE) process for a Massive multiple-input multiple-output (M-MIMO) network operating under the time-division duplex protocol and considering spatially correlated channels. Additionally, this work investigates and examines uncorrelated channels and correlated channels. In addition, the channels's spatial correlation is investigated using two models, namely, the local scattering model (LSM) and the exponential correlation model (ECM), where each model is examined for two array configurations (i.e., uniform linear array (ULA) and uniform planar array (UPA)). Furthermore, we propose a UPA configuration for each model based on the Kronecker product (KP) of the ULA arrangement, i.e., we propose the ECM and LSM for the UPA arrangement, respectively, based on the KP and using either the ECM or the LSM for the ULA arrangement. A comparison and evaluation of these models and their influence on the CE process for a M-MIMO network is analyzed. Numerical results are offred to assert our theoretical expressions

16:35 ***High Gain Double U-shaped Slots Microstrip Patch Antenna Array For 28GHz 5G Applications***

Asma Khabba (Cadi Ayyad University, Morocco); Layla Wakrim (Higher Institute of Engineering & Business (ISGA), Morocco); Zakaria El Ouadi, Jamal Amadid and Saida Ibnyaich (Cadi Ayyad University, Morocco); Zeroual Abdelouhab (FSSM, Morocco)

This research work is devoted to propose and investigate a new millimeter wave antenna array in the 28 GHz band for the fifth generation (5G) of the mobile communication systems. For this purpose, a modified patch antenna with double U-shaped etched slots is presented and employed to propose high gain 5G antenna array. The suggested array is composed of two radiating elements excited by a microstrip feed line and placed on the RTRogers 5880 laminate. An attractive performance is noted where the proposed array combines the most required features including the small size property, wideband operating of 2GHz (27.5-29.5 GHz), high efficiency up to 93% and high improved gain up to 12dB. The attained results proved the eligibility of the antenna to be a good contender for the 5G applications at 28GHz.

16:55 ***Compact Microstrip Filtenna Designed For Wireless Local Area Network Applications***

Zakaria El Ouadi, Jamal Amadid and Asma Khabba (Cadi Ayyad University, Morocco); Abdessalam EL yassini (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco); Saida Ibnyaich and Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

A small filtering patch Antenna is presented in this work, it consists of a bandpass filter integrated with a monopole radiating antenna. Utilizing Defected Microstrip and Ground Structures (DMS, DGS), a slot is implemented in both the patch and the ground. The bandpass filter is made up of half-wavelength and dual-stub resonators. This filtenna (filtering antenna) is designed for WLAN applications, and operates in the 5.15-5.35 GHz frequency range, with 5.22 GHz is the resonant frequency. The structure is implemented on a compact size of 34,8×27,08×1,6 mm3 equivalent to an electrical dimension of 0.60λ0 ×0.47λ0 × 0.027λ0, where λ0 is the resonance frequency's free-space wavelength. The simulation software used is ANSYS HFSS, which is based on the finite element method. In the E-plane, the filtenna has a bidirectional radiation pattern, while in the H-plane, it has an omnidirectional radiation pattern. A high selectivity, good reflection coefficient, and an excellent VSWR were attained in this work.

PS8-3: PS8-3

Chair: Teeris Thepchalerm (Mae Fah Luang University, Thailand)

15:35 ***Predicting ASD Using Optimized Machine Learning***

Shaikhah Almana (University of Bahrain, Saudi Arabia); Mustafa Hammad (University of Bahrain, Bahrain)

Autistic Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects the development of cognitive abilities, social-communicative skills and shows restricted or repetitive behaviors and interests. An earlier diagnosis of ASD reassures those specialized interventions that optimize children's long-term outcomes are accessed and met. Using a machine learning prediction model that can predict whether an individual has ASD at earlier ages can have multiple advantages. This paper Analyzes ASD datasets for children, adolescents and adults using NBC, KNN and LR. A 10-fold cross-validation method is used to evaluate the models with the three datasets. After that, the Attribute selection method is used to cut down the features using Info gain evaluator. Lastly, two ML models is stacked using the vote stacking technique to be evaluated. This paper is done with the aim to optimize predicting ASD using Autistic-Spectrum Quotient.

15:55 ***Median filter for denoising MRI: Literature review***

Sabrine Limam Chalghoumi (University of Tunis, Tunisia)

The disease of the century, Alzheimer's disease, which characterized the loss of various abilities such: cognitive, thinking, remembering, reasoning and behavioral. One of the tools to recognise an early detection of Alzheimer's disease is medical imaging and the most utilised is the Magnetic Resonance Imaging (MRI). It is a grey colour image with intensity in the range 0-255. Medical image segmentation helps us to pull out precious knowledge from a large quantity of medical image data. For better image segmentation, further phases must be processed. Like, reducing noise from MRI. Gaussian noise and Salt and pepper noise are examples of noises present in images. There are many denoising techniques, like the filtering domain and especially the median filter that proves its effectiveness in reducing the Salt and pepper noise. In this paper, we study Alzheimer's disease, noise in MRI, the Median filter and state of the art in this domain.

16:15 ***Measuring Accuracy Towards Facial Video Heart-Rate Estimation Using Haar-cascade and CNN Method***

Nur Arifin Akbar (University of Murcia, Spain); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Shakirah Mohd Taib (Universiti Teknologi Petronas, Malaysia); Suliman Mohamed Fati (Prince Sultan University, Saudi Arabia)

COVID-19 leads us to have a social distancing even for health-treatment. In this study, we attempt to estimate heart rates in humans using camera-based remote photoplethysmography (rPPG) methods, which are named after conventional PPG methods. The basic concept is focused on capturing minute variations in skin color during the human body's cardiac cycle, which involves the inflow and outflow of blood from the heart to other body parts. We have compared the performance of different methods of Blind Source Separation and face detection which form an integral part in accurately calculating the heart rate. Purpose: The purpose of this method was comparing the actual heart rate with a tuned parameter of Face Video Heart Rate estimation with CNN and OpenCV HaarCascade. Patients and methods: Videos in the dataset are run through a face detection model to get the region of interest for heart rate calculation. Source signals are converted to frequency domain for filtering and peak detection to obtain heart rate estimates Results: Face segmentation using Convolution Neural Network gives better results than the Haar Cascade OpenCV face detection module, which is as expected. Conclusion: Face segmentation using Convolution Neural Network gives better results than the Haar Cascade OpenCV face detection module. CNNs are slower to detect faces than the Open-CV module. Choosing an ROI by segmenting out facial pixels helped to keep the outliers low and therefore increased the robustness

16:35 ***Visual evoked potential classification support with Convolutional Neural Network and Recurrent Neural Network - A comparative study***

Zineb Cheker (LabTIC ENSA of Tangier University of Abdelmalek Essaâdi & ENSA Tanger, Morocco); Ahmed El Oualkadi (LabTIC Abdelmalek Essaadi University & ENSA de Tanger, Morocco); Saad Chakkor (LabTIC, ENSA of Tangier, University of Abdelmalek Essaadi, Morocco)

The analysis of biomedical signals is an interdisciplinary subject, used to develop automatic diagnostic systems for decision support. Among these biomedical signals, we find the VEP: Visual Evoked Potential signals, which are used to analyze the

appropriate functioning of the optical pathways. It is noted that the visual reading, as well as the measurement of the amplitude and latency P100, are used to interpret and analyze this signal in medical diagnostics. However, this technique is not very reliable, because the latency is sensitive to different factors such as stimulation conditions, age, sex, etc. On the other side, we find different cases when some pathological VEPs show a normal latency. In this work, we suggest an automated and accurate classification of Visual Evoked Potential signals, in order to make objective decision support, by proposing an optimized deep learning approach based on the exclusion test using recurrent as well as convolutional neural networks, without any features selection/extraction procedure. To differentiate between the effectiveness of the two architectures examined in our study, we applied training and testing procedures in Matlab. The comparison study findings show that Convolutional Neural Network CNN-1D allows a good accuracy reaching 96% compared to Recurrent Neural Network RNN equal to 88%. This difference is justified by the fact that RNN uses signal values as inputs when CNN has the specificity of calculating features using convolution filters.

16:55 ***Evaluation of the Efficacy of Wolbachia Intervention on Dengue Burden in a Population: A Mathematical Insight***

Afeez Abidemi (Federal University of Technology Akure, Nigeria); Hammed Olawale Fatoyinbo (Massey University, Palmerston North, New Zealand); Joshua Kiddy K. Asamoah (Kwame Nkrumah University of Science and Technology, Kumasi, Ghana); Sishu Muni (Massey University, Palmerston North, New Zealand)

This paper discusses the development and analysis of a nonlinear mathematical model to describe the transmission dynamics and control of dengue disease within the interacting human and mosquito populations. The model, which is governed by a twelve-dimensional system of ordinary differential equations, captures the subpopulation of symptomatic infected human with severe dengue symptoms and \textit{Wolbachia}-infected mosquito population. The dengue-free equilibrium of the model is obtained, and shown to be globally asymptotically stable with respect to the key dengue threshold, denoted by (\mathscr R_0). Numerical simulations are carried out to investigate the effects of \textit{Wolbachia} coverage and fraction of symptomatic infectious humans that will get dengue severe symptoms on the dynamical spread of dengue in the community. The impacts of various \textit{Wolbachia} coverage levels on the disease spread are quantified by carrying out the efficiency analysis.

PS8-6: PS8-6

Chair: Nattapan Kongbuamai (Mae Fah Luang University, Thailand)

15:35 ***Comparative Analysis of Deep Learning Models for Aspect Level Amharic News Sentiment Analysis***

Bekalu Tadele Abeje (Haramaya University, Ethiopia); Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Habtamu Ebabu (Wollo University, Ethiopia); Aleka Ayalew (University of Gondar, Ethiopia)

Nowadays, in the era of social media, customer input and feedback have significant impact on firm's services and products. Companies face a significant challenge in extracting meaningful information from this unstructured, unorganized, massive, and fragmented data. Some research works has been done on Amharic sentiment analysis (AMSA), however none of them have looked at the aspect level by utilizing a deep learning approach. This work focuses on sentiment analysis of Amharic text utilizing aspect level with a hybrid deep learning approach. The dataset was acquired from Amhara Media Corporation's official Facebook page in Microsoft Excel format. Comment exporter software was used to create a dataset of 10,000 in excel format. Different machine learning techniques such as Convolutional neural network (CNN), Long short-term Memory (LSTM), CNN-LSTM and CNN-GRU were used to train and test the dataset. The result of the study shows that LSTM model performed better than other models with training accuracy of 99.10% having a very little difference from CNN-GRU model with 99.08% training accuracy.

15:55 ***A Method for Assessing Effects of Technological Development on Military Capabilities***

Vesa Kuikka and Sami Peltotalo (Finnish Defence Research Agency, Finland)

We present a method to assess the effects of new technologies on the future development of military capabilities. Assessing technologies without any connection to capabilities is insufficient to assist the decision-making of selecting development projects or planning future procurement programs. Instead, a method to connect technologies to capabilities is needed. To this end, we propose a novel evaluation model to help carry out the evaluation process most easily. The evaluation model describes the effects of technological development on military capabilities through the application of different systems. Although our use cases consider military applications, the same questions are present in other fields in the private and public sectors. The focus of this study is to present the method while modelling results are provided only for illustrative purposes.

16:15 ***Information System of Cartographic Images Analysis for Soil Condition Monitoring of Agricultural Parcels***

Viktor Zhukovskyy (National University of Water and Environmental Engineering & Junior Academy of Sciences of Ukraine, Ukraine); Serhii Shatnyi and Nataliia Zhukovska (National University of Water and Environmental Engineering, Ukraine); Jan Perhac (Technical University of Kosice, Slovakia)

The main purpose of environmental monitoring is to manage and minimize the impact of human activities on the environment, to ensure compliance with laws and regulations, or to reduce the risk of adverse effects on the environment and human health. At the same time, we present the system for the automated processing of cartographic data. This system is used as a component of the information-analytical system of organic farming and ensuring the environmental sustainability of soils. In this paper, we described the steps of the design and development of the information system of cartographic images analysis based on the high-level Python language. The graphical method was used for calculating the area of interesting agricultural parcels from a satellite image. The developed image processing system allows us to perform a full range of subtasks required for fast and efficient processing. Comparative results of the speed of the individual stages of processing and analysis are presented as well.

16:35 ***Validation of Secure Wiping Applications for Android Phones***

Luqman Shahzad (Bahria University, Islamabad, Pakistan); Waqas Ahmed (National Center For Cyber Security (NCCS), Pakistan); Safina Naz (Air University, Pakistan); Faisal Shahzad (National Center For Cyber Security (NCCS), Pakistan & Air University, Pakistan); Touseef Sadiq (Universitetet i Agder, Norway)

Identity theft and financial fraud are happening very frequently, and data privacy becomes one of the biggest challenges for Android phone users. Cyber thefts are particularly perceptive when recovering confidential information from user phones after users have deleted/erased their data from phone memory using the factory restore or by using data wiping applications available on Google Play Store and Internet. This research work proposed and developed an efficient data wiping application for Android phones according to the National Institute of Standard and Technology (NIST) SP800-88 Standard of USA. The proposed application is based on the data overwrite technique. It has two layers, data erasing and data overwriting. After erasing the user data from phone memory, it overwrites deleted data locations by three overwrite phases, zeros, ones, and random characters. The data overwrite layer makes deleted data permanently unrecoverable from phone memory. To validate existing wiping applications, we selected the following data wiping applications from Google Play Store: Secure Erase with iShredder-6, Secure Delete, and ShredditData Eraser for data wiping experiments and picked the following data recovery applications and software to validate the above-selected wiping applications: DiskDigger, Dr. Fone, FonePaw and EaseUS MobiSaver for data recovery experiments on following selected Android phones: Samsung Galaxy SM-J600F, Vivo 1908 and Huawei Honor 9-lite LLD- 21 having Android version Oreo 8.0 and 8.1. The experiments result show that the chosen wiping applications are not working according to the standard, and the erased data is recoverable through the above-mentioned data recovery applications and software. On the other hand, data could not be recovered from the phones which are wiped with the proposed framework. We maintained the record of the recovered data from wiped Android phones and proposed an efficient overwrite-based data wiping application for Android phones based on the experiment results. Recommendation: A preinstall secure data wiping application must meet standards such as NIST SP800-88 for complete data erasure and should be available on all android phones for users.

16:55 ***A Survey Paper on Smartphones Data Security, Challenges and Awareness***

Luqman Shahzad and Ejaz Ahmad (Bahria University, Islamabad, Pakistan); Fiza Sohail (Queensborough Community College/CUNY, USA); Touseef Sadiq (Universitetet i Agder, Norway)

Smartphones have now become a vital tool in many people's everyday life, even to the level of addiction for some. Cell phones

are a critical piece of our regular use with the increasing of smartphone, the number of risk of data in smartphone is also increased. This paper provides regarding smartphone security and their vulnerabilities and how to be secure them and data security challenges and awareness about them. Data security on cellphones is a new and developing worry, especially when the data is expensive or sensitive. Despite the fact that there are numerous data protection solutions for cellphones, no research has been conducted. Users' expectations for such solutions We use a different strategy in this study. User-centric approach to the data protection challenge on cellphones, and examine the needs for data protection systems from the perspective of users' viewpoints. We elicit the types of data that users want to keep private. investigate current users' data-protection habits, and demonstrate how the security requirements for various data kinds varies.

PS8-7: PS8-7

Chair: Meriem Youssef (Higher Institute of Finance and Taxation (ISFF), University of Sousse, France & Logistics and Innovation Technology Research Center, IHE Paris, Paris, France)

15:35 ***Metaheuristic Algorithms For Portfolio Selection Problem: An Overview Including Crypto-Assets***

Houda Alaya (BADM Tunis Business School, University of Tunis, Tunisia); Meriem Youssef (Higher Institute of Finance and Taxation (ISFF), University of Sousse, France & Logistics and Innovation Technology Research Center, IHE Paris, Paris, France)

Due to the NP-hard nature of the portfolio optimization problem, a plethora of techniques, such as metaheuristic algorithms have been reported and used in the literature. Their capacity to produce top-quality solutions in reduced computing times makes them a seductive tool for decision-makers (investors, portfolio managers, policymakers...) by supplying real-time solutions. This paper provides an overview of the literature on the use of metaheuristics for solving NP-hard versions of portfolio selection optimization and focuses on their readiness to provide high-quality solutions. In addition, the existing literature including crypto-assets is highlighted. A major finding of this paper is that studies conducted in this specific framework are scarce.

15:55 ***Effectiveness of Deep Learning Long Short-Term Memory Network for Stock Price Prediction on Graphics Processing Unit***

Yakub Kayode Saheed (Al-Hikmah University, Ilorin, Nigeria); Mustafa Raji (Al-Hikmah University, Nigeria)

The stock price is a critical indicator of a nation's economic development. As a result, determining and defining the precise changes of the stock price is highly appreciated. However, because the stock market's complicated and uncertain behavior makes precise forecasting impossible, strong predicting models are very beneficial for the financial decision-making processes of investors. For many experts and analysts, projecting stock prices has proven to be a difficult undertaking. Indeed, investors are keenly engaged in the field of stock price forecasting research. Numerous investors are interested in the future direction of the stock price in order to make a wise and successful investment. Effective stock market prediction systems assist traders, investors, and analysts by giving helpful information such as the stock market's future direction. A unique LSTM model is utilized to predict stock market prices in this study. In order to shorten training and testing time, the suggested model experimental analysis was performed on Graphics Processing Unit (GPU). Data denoising and normalization are used in the data preprocessing. The suggested model was tested using experimental datasets from the S&P 500, NYSE, Nasdaq, and Forbes, and the findings were compared to those of other models. When compared to existing approaches, the experimental findings clearly show improvements in MAE, RMSE, and MAPE with competitive performance.

16:15 ***Goal Programming in Federated Learning: an Application to Time Series Forecasting***

Marco Repetto (University of Milan-Bicocca, Italy); Davide La Torre (SKEMA Business School, France); Muhammad Tariq (Abu Dhabi School of Management, United Arab Emirates)

Large-scale data analysis is growing at an exponential rate as data proliferates in our societies. This abundance of data has the advantage of allowing the decision-maker to implement complex models in scenarios that were prohibitive before. At the

same time, such an amount of data requires a distributed thinking approach. In fact, Deep Learning models require plenty of resources, and distributed training is needed. This paper presents a Multicriteria approach for distributed learning. Our approach uses the Weighted Goal Programming approach in its Chebyshev formulation to build an ensemble of decision rules that optimize aprioristically defined performance metrics. Such a formulation is beneficial because it is both model and metric agnostic and provides an interpretable output for the decision-maker. We test our approach by showing a practical application in electricity demand forecasting. Our results suggest that when we allow for dataset split overlapping, the performances of our methodology are consistently above the baseline model trained on the whole dataset.

16:35 ***VMD-based Multiscaled LSTM-ARIMA to Forecast Post-COVID-19 US Air Traffic***

Hana Rabbouch (University of Monastir, Tunisia); Hayet Saadaoui (SupAgro Montpellier, France); Foued Saâdaoui (King Abdulaziz University, Saudi Arabia)

Accurate traffic flow forecasting is an essential component of the Intelligent Transportation System (ITS). However, existing traffic forecasting methods using deep learning pay little attention to the pandemic's repercussions. This paper proposes a multiscaled deep learning framework called VMD-LSTM-ARIMA, which couples the variational mode decomposition (VMD) algorithm, long short-term memory (LSTM) neural network, and autoregressive integrated moving average (ARIMA) to accurately predict traffic flow time series. Just like any hybrid model, the proposal takes advantages of each one of these approaches, which enhances the performance of the overall forecasting model. Experiments were conducted on a US public traffic datasets, and the results showed that VMD-LSTM-ARIMA effectively increased the prediction accuracy.

16:55 ***The Adoption of E-Commerce by Businesses in Bahrain During Covid-19***

Deena Adel AlHudaib and Minwir Alshammari (University of Bahrain, Bahrain)

E-commerce plays an important and prominent role in the modern era, especially with the continued emergence of new technologies, which opened new horizons for entrepreneurs and business owners of small and medium enterprises to pursue the growth of their business and to expand their scope. Currently, SMEs businesses are no longer limited to practicing their business activities locally but internationally. Digitalization has a vital role in elevating the state of competitiveness between businesses, which in turn prompts many SMEs to acquire technologies that facilitate the business transition to e-commerce in light of gaining a competitive advantage over their rivals in addition to maintaining relevance in their field. This research will further explore the different challenges faced by SMEs in Bahrain during the Covid-19 period and analyze the various obstacles faced during the process of e-commerce adaptation. The research takes into consideration three main categories which are the organizational readiness, environmental readiness, and technological readiness. This study aims to demonstrate SMEs' willingness to transition their business activities to e-commerce after the devastating repercussions of the Covid-19 pandemic. A questionnaire was designed and shared with 110 employees working at SMEs and 100 responses received and selected to be the sample size of the research. The research revealed that SMEs in Bahrain faced many obstacles to transform to e-commerce business during the pandemic and among the obstacles where the financial cost of such transformation. The study provided further recommendation for future studies.

PS8-2: PS8-2

Chair: Muhammad Abrar ul Haq (University of Bahrain, Bahrain)

15:35 ***Renewable Energy Resources and the Fight against Poverty***

Muhammad Abrar ul Haq (University of Bahrain, Bahrain); Hafiz Abid Mahmood Malik (Arab Open University Bahrain, Bahrain); Farheen Akram (University of Bahrain, Bahrain)

The main objective of the Sustainable Development Goals (SDGs) is to eradicate poverty in all its manifestations. While global poverty continues to decline, development has slowed and remains uneven globally. The research will be crucial in defining pathways out of poverty to ensure that no one remains impoverished. It is worth considering worldwide experiences and the many roads out of poverty in this regard, with a particular emphasis on the role of solar energy in poverty alleviation. This study aims to contribute to the growing discussion and critical knowledge about the role and nature of solar energy in reducing poverty incidence among Pakistani households. In the current study, data were collected from 570 rural households living in

rural areas of Punjab province using a multiple-stage random sampling technique. The headcount index was used to determine the prevalence of poverty in the selected households, and the analysis was conducted using a binary logistic regression model. The study developed seven hypotheses, and its empirical findings reveal that all of them are accepted, demonstrating that these indicators significantly affect poverty incidence in the studied region. More precisely, households with access to solar energy will have a lower likelihood of falling into poverty and this finding is statistically significant. Policymakers can foster new business prospects by providing free education and training on emerging renewable energy technologies. Such interventions would enable the government to reinvest the fruits of economic growth in policies that assist the poor.

15:55 ***Exploring into Shuttle Services Satisfaction Factors Toward Sustainable Transit Development***

Sirin Prommakhot and Tosporn Arreeras (Mae Fah Luang University, Thailand)

This paper is part of comprehensive research of shuttle services assessment towards public transport promotion in Mae Fah Luang University. The objective is to determine the associated factors of campus shuttle service satisfaction. The questionnaire surveys were conducted via an online platform, and the valid sample was 353. The data were analyzed using IBM SPSS statistics version 26 software. There are four parts of analysis, first: the socio-demographics of participants; second: exploratory factor analysis; third: satisfaction factors descriptive statistics; and final: vehicle ownership and level of study and associated factors of shuttle services satisfaction. The socio-demographics of participants were analyzed by descriptive analysis, and the satisfaction and attitude factors were analyzed by exploratory factor analysis using principal component analysis method with varimax rotation method and confirm the validity by the reliability analysis. The relationship between associated factors was analyzed by ANOVA test. Findings revealed that three components, including services, operations, and facilities, can adequately measure satisfaction factors of shuttle services. Moreover, the results delivered advantages to policy promotion on public transport and contributed to a long-term beneficial impact toward sustainable transit development.

16:15 ***Machine Vision Recognition System of Edible and Poisonous Mushrooms Using a Small Training Set- Based Deep Transfer Learning***

William H. Sevilla (Batangas State University, Philippines)

A way of classifying if a mushroom is edible or not is presented in this study. As mushroom are slowly becoming popular, classifying these mushrooms would be crucial as some of the toxic mushrooms that could be found in the mushrooms are able to kill a person or give them a bad case of the stomachache and other effects. Using the YOLOv3 model a model is created that is able to classify these mushrooms. The model that was chosen has gotten a mAP score of 96.68% and is able to detect most of the inputs that are used to test the model. The model is also able to achieve a 90% accuracy as it was able to correctly detect 18 photos out of 20 when tested. This model could be used in order to ensure that there would not be any toxic mushrooms in houses or parks that a child could just pick up and swallow without being noticed by any adults.

16:35 ***Time Series Forecasting for Decision Making on City-Wide Energy Demand: A Comparative Study***

Orhan Nooruldeen (Imam Ja'afar Al-Sadiq University, Baghdad, Iraq., Iraq); Salwan Alturki (Al Muthanna University, Iraq); Mohammed Rashad Baker (Imam Ja'afar Al-Sadiq University, Baghdad, Iraq., Iraq); Ahmed Ghareeb (University of Kirkuk, Iraq)

Time series modeling and forecasting are critical in various practical applications, including the energy sector, and have been actively investigated in this field for several years. Many relevant methods for enhancing the accuracy and efficacy of time series modeling and forecasting have been proposed in the literature. This study aims to provide a comparative analysis of various common time series modeling and forecasting techniques for the daily electricity demand of the city of Kirkuk. The ability of the presented models to be extrapolated as well as increasing the confidence in models are also examined. Two years of out-of-sample data are used to validate the models. The Long Short-term Memory (LSTM) outperformed the other series types, demonstrating good agreement with the actual data. This study has implications for boosting renewable energy deployment, planning demand-side management, and measuring energy and cost-saving actions.

16:55 ***Determination of Insulation Parameters with Optimization Algorithms***

Ozen Gunal (Manisa Celal Bayar University, Turkey); Mustafa Akpinar (Sakarya University, Turkey & Amity University, United Arab Emirates); Kevser Ovaz Akpinar (Sakarya University, United Arab

Emirates & Rochester Institute of Technology, United Arab Emirates)

Insulation is one of the essential energy efficiency and sustainability topics. While insulation is primarily the subject of buildings, insulation can also be made in pipes and heat exchangers in the factory environment. In the first example of this study, the insulation material that should be used for the specified heat loss in the case of a basic circular heat source being covered with insulation material was determined, while in the second case, the targeted insulation thickness with the accepted maximum heat loss and insulation material coefficient was tried to be determined. The results obtained show that errors were zero in particle swarm optimization (PSO) and artificial bee colony (ABC) algorithms in the first case. In the second case, PSO, ABC, and firefly (FA) optimization algorithms have the lowest average error with 3x10E-5%, 1x10E-5%, 3x10E-5%, respectively.

PS8-8: PS8-8

Chairs: Farheen Akram (University of Bahrain, Bahrain), Donlaporn Suwanthep Suwanthep (Mae Fah Luang University, Thailand)

15:35 ***Dimension Learning-Based Hunting Strategy for the Solution of Economic Dispatch***

Muhammad Mahfooz Rafique (UET Taxila); Aftab Ahmad (UET Taxila, Pakistan)

This paper introduces a strategy used in the grey wolf optimization algorithm to solve the problem of economic dispatch having equality and inequality constraints for power system operation and planning. To analyze the strategy, called dimension learning-based hunting in grey wolf optimizer, the algorithm is applied on different IEEE standards test systems such as 6, 13, and 40, and the findings are equated with previous techniques developed to solve the economic dispatch problem. The comparison signifies that the modified grey wolf optimization can provide improved results in terms of cost reduction and performance.

15:55 ***Multicriteria selection of photovoltaic panels available using the SWARA-VIKOR methods in tunisia market***

M. ejda Bouzid (Higher Institute of Industrial Management of Sfax, Tunisia); Ahmed Frikha (Université de Sfax (ISGI), Tunisia & Institut Supérieur de Gestion Industrielle de Sfax, Tunisia); Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia)

Renewable energies hold a considerable place, in particular photovoltaic energy. PV panels are an envelope solution that combines energy generation and net energy demand reduction. In addition, PV models do not perform the same functions in terms of several factors. This article aims to propose a multicriteria decision analyses approach to solve the problem of selecting a set of available photovoltaic panels for various users in Tunisia. The proposed approach for raking the photovoltaic panels is based on the SWARA method to get a relative weight of each criterion, then integrate the VIKOR method to rank the alternatives (PV panels). Lastly, we verify the results and sensitivity analysis is performed to show the reliability of the proposed approach

16:15 ***Performance Assessment of Solar Combined System for a Detached House: Solar Fraction and Collector Efficiency***

Brahim Belmahdi (Univsesity of Abdelmalek Essaadi, Morocco)

Nowadays, a solar combined system is usually used in domestic hot water heating (HWH). In addition, domestic HWH consumption data is useful for a dynamic simulation for producing space heating and solar hot water of a solar combined system. The aim of this paper assessed and compare the energy performance of the solar combined system for a detached house in the Mediterranean climate. By using three cases study. Three different configuration models were used including ambient temperature, solar radiation on a horizontal and inclined surface to achieve our proposed methodologies in terms of solar fraction and collector efficiency, which were simulated and tested by TRANSOL software. The result reveals that the third model of each case has been considered as an appropriate configuration. The selected configuration reaches a higher value compared to the other model. Ultimately, the result verifies that the third model (high-performance FPC) is highly accurate compared to the previous cases.

16:35 ***Comparative Analysis of Controllers for Power System Dynamic Stability Improvement***

Habitamu Endalamaew Kassahun (University of Gondar, Ethiopia); Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Shaimaa H. Mohammed (Sumer University, Iraq)

A modern power system network is an interconnection of generating stations, long transmission lines, and distribution network loads. Interconnected power system networks face various challenges of instability. The presence of a dynamic disturbance in the power system network causes the problem of power system dynamic instability. Changes in the load, the use of high gain exciters, the use of high voltage direct current converters with negative damping, and the connection of poorly tuned generator excitations are examples of small-signal disturbances that disrupt a power system. The presence of a small-signal perturbation causes a constant increase or decrease in the alternator rotor speed, as well as an increase in the amplitude of the rotor oscillation. In this paper, these challenges were addressed by using suitable controllers to improve the synchronizing and damping torque of the system. The dynamic instability of the power system using a fuzzy logic controller (FLC) and STATCOM was investigated through simulation, individually and in comparison. The required data for simulation purposes was obtained from the IEEE 9 bus test system. The application of FLC is studied through simulation using the systems model with its linear simplified equations using MATLAB Simulink. The input parameters of the FLC used to enhance the power system dynamic instability are speed deviation and rate of change of speed of the synchronous alternator. The change of speed, rotor angle, and electrical torque deviation response versus time of full and 25% input mechanical power change was obtained. The simulation results show that the oscillation of the rotor angle and amplitude response of the system with the FLC is damped at 0.2s with an amplitude of 0.5 p.u, but the oscillation of the rotor angle and amplitude response of the proposed system with STATCOM is damped at 3.5s with an amplitude of 0.8 p.u. As a result, the proposed power system with FLC provides good damping of local mode oscillation, low overshoot and settling time response as compared to STATCOM.

16:55 ***Pro-Environmental Habits and Ecological Responsibilities***

Abid Rashid Gill (The Islamia University of Bahawalpur, Pakistan); Muhammad Abrar ul Haq (University of Bahrain, Bahrain); Afrasiyab Arshad (The Islamia University of Bahawalpur, Pakistan); Farheen Akram (University of Bahrain, Bahrain)

Habits provide the foundation of many everyday acts and maybe formidable barriers to change; once formed, habits remain without much thinking or re-consideration. Habits are rarely included in research on pro-environmental behavior, which instead highlights the relevance of values, norms, attitudes, intentions, and motivation for pro-environmental conduct. Therefore, this study has a key research objective to analyze the pro-environmental habits of common citizens in Pakistan, especially in South Punjab. For this purpose, the primary data has been collected from 430 individuals living in south Punjab, Pakistan. Descriptive analysis has been conducted for four main factors namely, pro-environmental habits (PEH), environmental concern (EC), health concern (HC), economic concern (ECOC) to analyze Pro-Environmental Habits of common citizens. This study indicates that pro-environmental habits are not a unitary, undistinguishable idea and that a diverse arrangement of factors decides the diverse forms of pro-environmental habits. Hence, it is significant to first classify the behavior to change and then find what factors could explain that specific behavior.

PS8-9: PS8-9

Chairs: Mourad Messaadia (University of Bahrain, Bahrain), Bussaba Sitikarn (Mae Fah Luang University, Thailand)

15:35 ***Hybrid Momentum Search Algorithm For Solving Non-Convex Economic Dispatch Problem***

Summaya Qasim (University of Engineering and Technology (UET), Taxila & UET Taxila, Pakistan); Aftab Ahmad (UET Taxila, Pakistan)

In this proposed research Momentum Search Algorithm (MSA) is labored to resolve Economic Dispatch (ED) delinquency. ED is an exceptionally non-linear, nonconvex, and multi-dimensional power structure problematic optimization. MSA is a metaheuristic technique enthused by law of conservation of momentum. In this research, MSA is used to unravel nonconvex IEEE 3-unit and 6-unit test scheme including losses. Simulation results show perfection in implementation time and cost demonstrating the rationality of anticipated procedures in resolution of ED delinquency.

15:55 ***A Decision Support Tool for Minimizing Energy Consumption in Water Distribution Networks***

Abdulla Mohammed (Khalifa University, United Arab Emirates); Mohammed Abdallah (Emirates Water & Electricity Company (EWEC), United Arab Emirates); Andrei Sleptchenko and Ali Bouabid (Khalifa University, United Arab Emirates)

Economic development and population growth are continuously increasing the pressure on water utilities. Water transmission and distribution networks are considered an energy-intensive process. The primary energy consumption in water networks is due to pumping. Minimizing the energy consumption of the pumps becomes the primary target for many water utilities around the world. This research aims to develop a decision tool to optimize pumping operation costs in water distribution networks. A pilot case study from a utility water network company is selected to develop and test a new optimization tool. The case study consists of two water pumping stations, six variable speed pumps, six tanks, and nine demand nodes. The operation system of these pumping stations automatically controls all the variables (motor speed, pressure, flowrate, valve opening, and closing) that will satisfy the hydraulic requirement of the water network. Currently, the start and stop of each pump are decided based on human experience regardless of the electricity tariff. In this study, a new optimization decision tool is developed to help the operation decide the optimum pumping flowrate for the upcoming 24 hours, minimizing pumping cost and satisfying all requirements and constraints. The model required the user to fill the hourly demand forecast at each demand node, electricity tariff, initial tanks level, maximum and minimum pump flowrate. The optimization model uses a linear programming algorithm for finding the optimum flowrate for 24 hours. AIMMS optimization software was selected for the implementation of the optimization model and the development of a user-friendly interface. The optimum flowrates were tested on EPANET to verify the feasibility of the optimum schedule from hydraulics perspectives. Results show that the new optimization tool is robust and has successfully reduced the energy cost of a pumping station by up to 9%.

16:15 ***Design of a Rocket-powered Descent Jetpack Equipped with Parachute***

Abdul Qader Abdullah, Ahmad Mahammad Habash, Mohamed Abdo Mahmoud, Abdullah Raed Labeeb, Mohamed Moutasim Ahmed and Sharul Sham Dol (Abu Dhabi University, United Arab Emirates)

This project focus on designing and simulating a scaled down of rover spacecraft mission used for descending operations with a rocket-powered jetpack after entering the atmosphere of Mars. The aim is to investigate the different phases of mars descending operations, to use the CFD code to verify the theoretical results obtained and to investigate the aerodynamic properties of the components (nozzle and parachute). The liquid propellant pump fed Hydrazine with Nitric Acid Oxidizer was found to be the optimum fuel for this design project. A steady state with K-epsilon turbulence model were simulated to solve the Navier-Stokes Equation. The observed results illustrate that the theoretical calculations match with the CFD results by an approximate of 2.9% error in drag coefficient of the parachute and 6.4% error in the thrust comparison of the nozzle.

16:35 ***Optimal Power Dispatch of Distributed Energy Resources in Unbalanced AC Microgrid Considering Load and Generation Uncertainties***

Zeeshan Yousaf and Sarib Malik (University of Engineering and Technology Taxila, Pakistan)

Distributed Energy Resource (DER) scheduling is usually performed while considering lumped load models in unbalanced distribution system (UDS). However, it is not necessary that lumped load models represent the actual characteristics of distribution system. Therefore, in this paper, DERs scheduling is performed while considering time-varying loading characteristics of each phase of UDS. Grasshopper Optimization Algorithm (GOA) is used to optimize the performance of UDS. The proposed methodology is implemented on IEEE 37 node feeder, and its comparison with recent studies demonstrates the effectiveness of the approach

16:55 ***Improving the passive energy efficiency of an office building in Agadir Morocco using dynamic thermal simulations in DesignBuilder***

Fatiha Outgouga (Ibn Zohr University, Morocco)

This study aims to assess the impact of various passive energy efficiency measures on the thermal performances of an office building in Agadir. The parameters evaluated are orientation, envelope composition, type and area of windows glazing, natural ventilation, and shading devices. To evaluate the impact of these parameters; occupation, lighting, and appliances densities are

constant in the different scenarios. Thermal simulations are performed using DesignBuilder. Results show that these measures have a positive impact on the energy performance of the building, by reducing its annual loads. By quantifying the effect of different passive approaches, it is concluded that the use of insulation materials has a significant effect on energy conservation, compared to other parameters. The environmental impact of the envelope composition is investigated too, the utilization of the insulation materials leads to greenhouse gas emissions mitigation. The optimal combination that permits energy consumption reduction is southern orientation, wall and roof insulation, windows of double glazing, low infiltration rate (0.3vol/h is the adopted value), low window-to-wall ratio (the chosen WWR is 10%), and the use of blinds.

Friday, March 25 15:35 - 16:55 (Asia/Bangkok)

PS8-1: PS8-1

Chairs: Abdulsattar Alazzawi (University of Bahrain, Bahrain), Prapamon Seeprasert (Mae Fah Luang University, Thailand)

15:35 ***Application of Industrialised Building System in the Field of Construction toward Sustainability: Future Routes and a Theoretical Mapping***

Aawag Mohsen Alawag (Universiti Teknologi PETRONAS, Malaysia); Ammar AL-Ashmori (Universiti Teknologi PETRONAS & Yemen, Malaysia); Syed Ammad (Universiti Teknologi PETRONAS, Malaysia)

Industrialized Building System (IBS) is a construction technique in which components are manufactured in a controlled environment (on or off-site), placed, transported, and assembled on-site with minimal extra site activities, according to the Construction Industry Development Board Malaysia (CIDB). The application of IBS in construction projects could significantly improve site performance in terms of safety, quality, cost-effectiveness, productivity, sustainability, and waste reduction. In the construction industry, sustainability has become increasingly essential. Meanwhile, due to the extremely difficult constraints that stakeholders encounter in adopting new technology and a scarcity of experienced labor, the degree of IBS implementation in Malaysia remains low. According to several studies, typical IBS is gradually being pushed to the background. However, no systematic study applying bibliometric analysis of IBS studies to further investigate relevant research in this field was uncovered. This paper offers a summary of the IBS recent studies gathered from the "Web of Science" database. VOSviewer was used with bibliometric analysis technique to visualize the literature contained in the study scope. As a conclusion, six clusters were discovered that focused on these primary theme segments: IBS approach, prefabrication, construction, innovation, sustainability, and management. Based on the current gap, this paper makes recommendations for future IBS research. Assisting the IBS research community with research and development

15:55 ***Values-Based Decision-Making for Conserving Built Heritage***

Kanika Bansal (Guru Nanak Dev University, Amritsar & Chitkara School of Planning & Architecture, Chitkara University, Punjab, India); Pankaj Chhabra (Guru Nanak Dev University, Amritsar, Punjab, India)

Amidst the urbanization processes and need for contemporary development, preservation, conservation and maintenance of heritage buildings requires rational decisions by the urban local bodies (ULBs). The main challenge lies in the subjectivity in assigning values to heritage buildings because of the diverse stakeholders involved in the process. Value assessment aids to assign Grades (Grade I/II/III) to heritage buildings that ultimately steers the conservation action to be taken. Conflicting opinions on grading heritage buildings and deciding which building is to be preserved and which should be pulled down has resulted in the need for an analytical framework to support the process of grading built heritage. Multi Criteria Decision Making (MCDM) offers a formal methodology to deal with such problems induced due to decision-making taking into account the available information and stakeholders' opinion. This study accounts for the problems in grade assessment of heritage buildings through the Weighted Sum Method (WSM) for ranking attributes based on multiple criteria, which in the current research are the values assigned to the heritage buildings. The present study thus, aims to grade the built heritage in the colonial hill town (CHT) of Shimla in north India through a values-based priority decision-making method. The research will aid the decision-makers to prioritize the level of

conservation these buildings deserve through a transparent analytical framework which otherwise is done subjectively involving conflicting stakeholders, leading to disputes over which heritage resource to be conserved and to what level.

16:15 ***Proposing a Multidimensional Model to Support Organizational Transformation and Sustainable Development Decision in the Arab World***

Saeed Hamedd Aldulaimi and Marwan Mohamed Abdeldayem (Applied Science University, Bahrain); Abdulsattar Alazzawi (University of Bahrain, Bahrain); Abdulhameed Baqi (Applied Science University, Bahrain)

this study aims to revise the contemporary change management and organizational transformation models and propose a multidimensional model of organizational transformation that achieves the objectives of sustainable development from an Arab perspective. Literature review and secondary data analysis were employed to formulate the hypothesized model of organizational transformation. The findings of this study offer valuable insights into the Arabian culture and its influences in a transformational context. The findings of this study will be valuable to the decision-makers and business organizations that intend to achieve change drives, especially those in the Arabic area. Directors at global companies can likewise benefit from this study assuming they have transactions with individuals from this region. The study is among the primary that explores the issue of organizational transformation according to the viewpoint of Arab culture.

16:35 ***Using Blockchain Technology for a Sustainable Agri-food Supply Chain in Thailand***

Korawit Fakkhong, Nattaphon Rangsaritvorakarn and Chairerk Tantitecha (Mae Fah Luang University, Thailand)

Agri-food supply chain are facing dynamic changes in both developed and developing country, where traditional markets are increasingly challenged through modern trade market (supermarkets) chains, and this offers particular opportunity for Thailand food producers if they can adhere to the exacting supplier standards and systems dictated by supermarket chains particularly quality assurance. Rural farmers can find themselves excluded from dealing with such bodies because they do not have the resource to implement the necessary systems to guarantee process quality. There is increasing need to develop more efficient and effective logistics operation in order to better integrate Thailand's agri-food industry particularly food producer into this important business sector. The blockchain in its guise as distributed ledger's allow encrypted information regarding each transaction to be securely shared between the relevant parties and offers a new approach for enhancing transparency and traceability between business and food producer, as well as the government organisations. This paper introduces the challenges currently faced by food producers and demonstrates how blockchain could potentially integration and improve service reliability for food producers.

Friday, March 25 17:15 - 17:45 (Asia/Bangkok)

Closing: Closing Ceremony

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Time	In-door Space	Plenary Hall 1	Plenary Hall 2	Room1	Room2	Room3	Room4	Room5	Room6	Room7	Room8	Room9
Wednesday, March 23												
07:30-09:00	ATK: ATK Testing											
09:00-10:00	REG: Registration											
10:00-11:00		Opening: Opening Ceremony										
11:00-11:45		PN1: Plenary Session 1										
11:45-12:30		PN2: Plenary Session 2										
12:30-13:30	Lunch: Lunch											
13:30-14:50				PS1-1: PS1-1	PS1-2: PS1-2	PS1-3: PS1-3	PS1-4: PS1-4	PS1-5: PS1-5	PS1-6: PS1-6	PS1-7: PS1-7	PS1-8: PS1-8	PS1-9: PS1-9
14:50-15:10												
15:10-15:15	Break: Coffee Break											
15:15-16:00		SP1-1: Semi-Plenary 1-1	SP1-2: Semi-Plenary 1-2									
Thursday, March 24												
08:00-08:30	ATK+REG: ATK Testing and Registration											
08:30-09:50				PS2-1: PS2-1	PS2-2: PS2-2	PS2-3: PS2-3	PS2-4: PS2-4	PS2-5: PS2-5	PS2-6: PS2-6	PS2-7: PS2-7	PS2-8: PS2-8	PS2-9: PS2-9
09:50-10:10												
10:10-10:20	Break: Coffee Break											
10:20-11:40				PS3-1: PS3-1	PS3-2: PS3-2	PS3-3: PS3-3	PS3-4: PS3-4	PS3-5: PS3-5	PS3-6: PS3-6	PS3-7: PS3-7	PS3-8: PS3-8	PS3-9: PS3-9
11:40-12:00												
12:00-13:15	Lunch: Lunch											
13:15-14:00		PN3: Plenary Session 3										
14:00-15:40				PS4-1: PS4-1	PS4-2: PS4-2	PS4-3: PS4-3	PS4-4: PS4-4	PS4-5: PS4-5	PS4-6: PS4-6	PS4-7: PS4-7	PS4-8: PS4-8	PS4-9: PS4-9
15:40-16:00	Break: Coffee Break											
16:00-16:30		INFORMS BH: INFORMS BH										
16:30-17:15		SP2-1:	SP2-2:									

		Semi-Plenary 2-1	Semi-Plenary 2-2									

Friday, March 25

08:00-08:30	ATK+REG: ATK Testing and Registration											
08:30-10:10				PS5-1: PS5-1	PS5-2: PS5-2	PS5-3: PS5-3	PS5-4: PS5-4	PS5-5: PS5-5	PS5-6: PS5-6	PS5-7: PS5-7	PS5-8: PS5-8	PS5-9: PS5-9
10:10-10:20	Break: Coffee Break											
10:20-12:00				PS6-1: PS6-1	PS6-2: PS6-2	PS6-3: PS6-3	PS6-4: PS6-4	PS6-5: PS6-5	PS6-6: PS6-6	PS6-7: PS6-7	PS6-8: PS6-8	PS6-9: PS6-9
12:00-13:00	Lunch: Lunch											
13:00-13:45		PN4: Plenary Session 4										
13:45-15:25				PS7-1: PS7-1	PS7-2: PS7-2	PS7-3: PS7-3	PS7-4: PS7-4	PS7-5: PS7-5	PS7-6: PS7-6	PS7-7: PS7-7	PS7-8: PS7-8	PS7-9: PS7-9
15:25-15:35	Break: Coffee Break											
15:35-16:55				PS8-1: PS8-1	PS8-2: PS8-2	PS8-3: PS8-3	PS8-4: PS8-4	PS8-5: PS8-5	PS8-6: PS8-6	PS8-7: PS8-7	PS8-8: PS8-8	PS8-9: PS8-9
16:55-17:15												
17:15-17:45		Closing: Closing Ceremony										

Wednesday, March 23 7:30 - 9:00 (Asia/Bangkok)

ATK: ATK Testing

Wednesday, March 23 9:00 - 10:00 (Asia/Bangkok)

REG: Registration

Wednesday, March 23 10:00 - 11:00 (Asia/Bangkok)

Opening: Opening Ceremony

Wednesday, March 23 11:00 - 11:45 (Asia/Bangkok)

PN1: Plenary Session 1

Chair: Hatem Masri (University of Bahrain & University of Sousse, Bahrain)

Resiliency strategies in the supply chain: the case of aviation management

Wednesday, March 23 11:45 - 12:30 (Asia/Bangkok)

PN2: Plenary Session 2

Chair: Fouad Ben Abdelaziz (NEOMA Business School, France)

Digital Technologies: Opportunity or Challenge for Higher Education Institutions

Wednesday, March 23 12:30 - 13:30 (Asia/Bangkok)

Lunch: Lunch

Wednesday, March 23 13:30 - 15:10 (Asia/Bangkok)

PS1-1: PS1-1

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

13:30 ***Intelligent Data Management to Facilitate Decision-Making in Healthcare***

Mourya Pathapati (Symbiosis International Deemed University, India); Saikat Gochhait (Lavale & Symbiosis International: Deemed University, India)

The advancements in digitization are transforming the healthcare industry, one of the prominent industries producing critical data through patient care. The management of structured and processed data is becoming a challenge. Collecting, storing, and analyzing the data by efficiently reducing the complexity of data management makes the healthcare industry one of the most valuable industries. Creating meaningful and accurate disease predictions is critical in the healthcare sector. A study was conducted using VOSviewer software, which led to four clusters of keywords from different domains based on occurrences and relevance taken from 1500 documents from 1995 to 2021 from Web of Science. These keywords were mapped to the fields impacting the data management in Healthcare to explore the potential problems based on several types of research to establish a framework with an exploratory analysis. The methodology applied in this analysis describes the progress in data management in healthcare and can let researchers, scholars, and healthcare professionals gain insights for facilitating the healthcare decision makers.

13:50 ***Attention U-Net for Glaucoma Identification Using Fundus Image Segmentation***

Thisara Shyamalee and Dulani Meedeniya (University of Moratuwa, Sri Lanka)

Glaucoma is a fatal and worldwide ocular disease that can result in irreversible blindness to the optic nerve fibers of the eye. After cataracts, glaucoma is the main reason for blindness. Optic Disc (OD) and Optic Cup (OC) are important for fundus image segmentation. This study proposes attention UNet models with three Convolutional Neural Networks (CNNs)architectures, namely Inception-v3, Visual Geometry Group 19(VGG19), Residual Neural Network 50 (ResNet50) to segment fundus images. Several data augmentation techniques were used to avoid overfitting and achieve high accuracy. The attention UNet with ResNet50 as the encoder backbone showed the highest accuracy of 99.53% in segmenting OD using the RIM-ONE dataset among the considered configurations.

14:10 ***A Comparative Study of Heart Disease Prediction Using Classification Techniques***

Sara Abdulla Alshakrani (UOB, Bahrain); Sawsan Hilal (University of Bahrain, Bahrain)

In today's world, the most challenging thing for people is to sustain good health. One of the most significant impacts on people's health and lives is heart disease (HD). Heart failure is the number one cause of the greatest number of deaths worldwide. The goal of this paper is to evaluate classification techniques to see which one is the most accurate in predicting HD using R software. Statistical analysis helps in mining and examining the important factors of HD and can aid in determining whether or not a patient has a cardiac condition. In this paper, the potential of six classification techniques is used to predict heart failure. Namely, Logistic Regression (LR), Naïve Bayes (NB), Decision Tree (DT), K-Nearest Neighbor (KNN), Random Forest (RF), and Support Vector Machine (SVM). According to the results of the analysis, KNN outperforms the other classification techniques in HD diagnosis.

14:30 ***Predicting the Likelihood of Stroke by Analyzing the Clinical and Non-clinical Features***

Isa Yaser AlHeddi, Elham Abdulla Musaaed, Aysha Alkhayyat, Sawsan Hilal and Iyad Atoom (University of Bahrain, Bahrain)

Stroke is an interruption of the blood supply to the brain that leads to the death of brain cells. It is a primary cause for death and disability globally. Early recognition of individuals' susceptibility to stroke can help preventing it or reducing the severity thereof. This paper studied various clinical and non-clinical factors to build a model that predicts the occurrence likelihood of a stroke with the aim of utilizing the machine leaning capabilities to reduce stroke mortality rates. Machine learning classifiers were trained using the predictors from an online open source dataset. The implemented classifiers are the K Nearest Neighbor (KNN), Random Forest and Logistic Regression. Logistic Regression was found to provide the best predictions, though not significantly outperforming the other two classifiers. Age, glucose average level, ever married, and residence type were found to be the predictors that influence the response value the most. It is recommended that a larger data set is considered with more predictors. Moreover, separate prediction algorithms can be developed for children and adults.

14:50 ***Alzheimer's Disease Detection using Empirical Mode Decomposition and Hjorth parameters of EEG signal***

Digambar Puri (Ramrao Adik Institute of Technology, India); Pramod Haribhau Kachare (IIT Bombay & Ramrao Adik Institute of Technology, India)

Alzheimer's disease (AD) diagnosis is performed through the patient's interviews or questionnaires by an experienced

psychiatrist. This process is time-consuming, biases, and subject-specific. The present study aims to develop an automatic AD detection using Electroencephalogram (EEG) signal to alleviate these problems and to support neurologists. Each EEG signal is decomposed using the empirical mode decomposition (EMD) algorithm into nine Intrinsic mode functions (IMFs). Ten different features are extracted from these IMFs. Only Hjorth parameters (activity, mobility, complexity) are selected using the Kruskal-Wallis test. The selected features from EEG recordings of 23 subjects (AD-12 and NC-11) are used to train and test the Least-square support vector machine (LS-SVM) classifier with three different kernel functions. A maximum of 92.90% classification accuracy is obtained using the features of IMF-4 with 10-fold cross-validation. The results conclude that the proposed method can detect AD patients efficiently. The proposed method can further be used to detect other neurological disorders.

PS1-2: PS1-2

Chairs: Adamu Ali-Gombe (Mintra LTD & Robert Gordon University, United Kingdom (Great Britain)), Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India)

13:30 ***Detection of Oral Cavity Squamous Cell Carcinoma from Normal Epithelium of the Oral Cavity using Microscopic Images***

Chiagoziem Chima Ukwuoma and Zhiguang Qin (University of Electronic Science and Technology of China, China); Md Belal Bin Heyat (Shenzhen University, Shenzhen, China); Haider Khan (Orthopedics Surgery West China Hospital, China); Faijan Akhtar (University of Electronic Science and Technology of China, China); Mahmoud Saleh Masadeh (Hijjawi Faculty for Engineering, Yarmouk University, Irbid, Jordan); Olusola Bamisile (University of Electronic Science and Technology of China, China); Omar AlShorman (Najran University, Saudi Arabia); Grace U. Nneji (University of Electronic Science and Technology of China Chengdu, China)

The most common and widely known type of head and neck cancer is the Oral or mouth neoplasm, of which Oral Squamous Cell Carcinoma (OSCC) is the most popular. Despite its impact on Mortality, it is always diagnosed at a late stage due to the inefficiency of the screening models at the early detection stage. Early detection of oral cancer has a more than 83% survival rate, although the rate of early detection currently is 29%. Partnering with Oral cancer early detection, the deep learning model aids in detecting patterns of oral cancer cells. In this paper, we propose using ensemble pre-trained deep learning models while unifying the ensemble heads with more shared layers for the early detection of Oral cancer from microscopic images. Various state-of-the-art results are evaluated using transfer learning while using the Augmentor library to establish high-quality microscopic oral cancer image datasets. The proposed approach obtained a 0.1-0.6% improvement compared with transfer learning methods using 100x magnification and 400x magnification, thus illustrating the robustness of the model for low-quality and high-quality images. The result obtained proves that the proposed methodology is a promising method for the early detection and classification of oral cancer.

13:50 ***Applications of AI in Healthcare Sector for enhancement of medical decision making and Quality of Service***

Avinash Kumar (Symbiosis International University, India); Sujata Joshi (Symbiosis International University - Institute of Telecom Management, India)

The objective of this paper is to know about different AI implementations in healthcare and to analyze their effect on the healthcare sector which can bring significant changes in the medical world. The impact of AI on the healthcare sector has remained less focused in academic study hence it becomes important to study Artificial Intelligence applications that can assist in different fields of the medical industry and can help in decision making. Integrating AI in healthcare has been in talks but has not got the speed due to lack of research. This paper will help to address this gap by proposing a conceptual study of AI in healthcare and analyzing its different uses which can help to come up with some significant solutions for the healthcare sector and help in decision making. The case study approach has been used for this study in order to collect information with respect to different applications of AI in the healthcare field where it has been successful. Since AI can definitely act as an effective complement to doctors in the future, its implications are required on an urgent basis. This study will help healthcare professionals, medical

equipment providers, academicians, government officials in developing solutions for social wellbeing. This research paper will help in boosting the healthcare sector through the proper use of AI. AI is the future and is ever-growing and hence it needs to be researched thoroughly on a regular basis.

14:10 ***AI/ML enabled decision making in facilitating Robotic surgery***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Shrestha Chakraborty (Symbiosis International Deemed University, India)

Technological advancements have the potential to help every surgeon to enhance the quality of world-wide surgical care. Robotic surgery is currently at its inception stage but is expected to bloom with parallel advancements in computer science and artificial intelligence. [1] This engages a set of analytical learning algorithms and allows computer to accomplish things similar to those performed by the human brain. The objective of this paper would be to understand the present and future scope of robotic surgery utilizing AI/ML techniques. The study will revolve around how next-generation surgical robots will be inherent in optimizing a surgeon's skills productively, to achieve the pinnacle of precision during complicated surgical procedures. It will focus on how AI/ML helps in Robotic Spine Surgery, Minimally Invasive Surgery techniques, and ophthalmic surgeries. It will talk about the current limitations of robotic surgery and how with latest technological advancements it will be possible to overcome the shortcomings.

14:30 ***IoT enabled applications for Healthcare decisions***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Ibna Suhail (Symbiosis International Deemed University, India)

With the advent of digital transformation, technology has brought about a gigantic and momentous change in almost every industry. Internet of Things (IoT), being one of the most revolutionizing technology, has been impacting all fields of life immensely, but its impact on the healthcare industry has been particularly significant due to its cutting edge transition. The objective of this paper is to understand the role of IoT in this sector, its various use cases, and on how the devices assists medical professionals to function more efficiently and patients for an enhanced treatment. For instance, the Intelligent Asthma Monitoring wearable technology can forecast the oncoming asthma attack way before the person wearing it can comprehend. Apple watches, though not designed with this agenda in the first place, have now been a significant part in gathering information about people with the new blood oxygen measuring functionality, echocardiogram (ECG) tracking, and also detecting irregular heartbeat which is an indicator of Atrial Fibrillation (AFib). Furthermore, the paper will also address the probable challenges of the technology in the sector and understand the current and future adaptability of internet of medical thing devices.

14:50 ***Numerical bifurcation analysis of improved denatured Morris-Lecar neuron model***

Hammed Olawale Fatoyinbo (Massey University, Palmerston North, New Zealand); Sishu Muni (Massey University, New Zealand); Indranil Ghosh (Massey University, Palmerston North, New Zealand); Ibrahim Sarumi (King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia); Afeez Abidemi (Federal University of Technology Akure, Nigeria)

This work considers the analysis of improved denatured Morris-Lecar neuron model incorporating external periodic current and electromagnetic induction. First the dynamical behaviour of the original denatured Morris-Lecar model is addressed through phase plane and bifurcation analysis. It is shown that the model in response to variation of system parameters exhibits class II excitability. Then we investigate the effects of external periodic current and electromagnetic flux on the dynamical properties of the improved denatured Morris-Lecar neuron model. It is found that variation of the amplitude and angular frequency of the current and frequency gain of the magnetic flux lead to various types firing patterns ranging from regular periodic spiking to complex bursting. The improved model could be applied to research where simple models are required for physiological and pathophysiological responses in neurons.

PS1-7: PS1-7

Chair: Siddeeq Yousif Ameen (Advisor & Duhok Polytechnic University, Iraq)

13:30 ***Addressing Big Data Analytics Issues and Challenges Using Cloud Infrastructure***

Hanna Moosa (Asia Pacific University of Technology & Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

Data related terms are the buzzwords in research and academia in recent studies. Big Data, cloud computing, data analytics and artificial intelligence are some of the terms commonly seen in these studies. Big data and cloud computing integration opens many possibilities and opportunities to many different organisations and businesses throughout the world. There are many cloud computing service providers offering different service model and deployment model portfolios to choose from. Powerful analytical tools are being integrated with cloud computing such as Hadoop, Spark, Storm and so on to speed up the analytical process and maximise the benefit of cloud computing. This research focuses on the use of cloud computing in big data analytics. In this paper, different cloud computing models, available analytical tools and real-time data processing has been discussed with comparative analysis of these techniques. Critical evaluation of the existing solutions in major cloud computing providers is also discussed with future research scope.

13:50 ***Investigation and Development of Transparent Online Assessment: A Case Study at DPU***

Siddeeq Yousif Ameen (Advisor & Duhok Polytechnic University, Iraq)

The unprecedented COVID-19 incident created many challenges for higher education institutions. This case brought online examinations and E-learning to the spotlight after many universities refuged to e-assessment and online teaching. However, one of the main obstacles with online teaching and learning is the e-assessments transparency, especially in Iraq universities and Kurdistan Region universities. Thus, the aim of the paper is to understand the experiences of students and lecturers in Duhok Polytechnic University (DPU) situated at KRG Iraq with online assessment. The paper investigates via a questionnaire designed for this purpose the DPU participants with online assessments to show how are they are familiar with online exams, determine the most important problems that appeared during online examinations. The results from the questionnaire are analyzed and assessed to determine factors affecting the quality of online learning and e-assessment transparency. Finally, solutions suggestions with best measures to assure the transparency and quality of online examination are recommended.

14:10 ***Mediation Model of Relative Advantage in Mobile Payment***

Doni Purnama Alamsyah and Sandy Setiawan (Bina Nusantara University, Indonesia)

Interest in using mobile payments is influenced by the characteristics of mobile payments, such as the level of mobility. Currently, there are many mobile payment options, including e-wallets, their use continues to increase but user consistency still needs to be evaluated, this is aimed at maintaining sustainable technology usage. The purpose of this study is to examine the relationship between mobility, relative advantage, and intention to use. The final goal is to find a model that is able to increase the intention to use mobile payment, thereby maintaining the sustainability of technology use. The research method is carried out through a quantitative survey, a survey conducted on mobile payment e-wallet users in the city of Bandung as many as 227 respondents. The data from the respondents was obtained through a questionnaire that had previously been determined quantitatively. The data is processed through path analysis using the SmartPLS tool, while the inner and outer tests are used to test the research model. The research model was tested based on the results of the research hypothesis test. The results of the study stated that mobility as the main characteristic of mobile payment e-wallet has a positive relationship with the user's relative advantage. Relative advantage is stated to have a positive relationship with the intention to use mobile payment. However, it is immediately known that mobility does not have a significant relationship with intention to use. The findings of this study explain the importance of the relative advantages of mobile payments that need to be built by service providers in supporting the relationship between mobility and intention to use. The findings of this study support being able to support the creation of a sustainable for using technology in mobile payment in Indonesia, if the relative advantage can be considered as the value of the mobile payment

14:30 ***A Critical Review of Cloud Computing Environment for Big Data Analytics***

Dzulaisar Dzulhikam (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

Cloud computing offers a secure, scalable and widely accessible platform for enormous data distributed management systems. There are a variety of appealing characteristics in cloud computing for its consumer market as many cloud services and deployment strategies supplied by Cloud Service Providers (CSPs) are based on customer demands. Furthermore, cloud computing can store and handle a huge volume of information and do real-time big data analytics, presenting customers with

helpful information and patterns. Furthermore, many CSPs, such as AWS, Microsoft Azure, and Google Cloud Platform, offer benefits that help customers be more productive by executing activities according to their demands. This paper provides a critical review of the cloud computing environment provided by contemporary CSPs and learn about the present issues of cloud computing for big data analytics.

14:50 ***FedNet: Federated Implementation of Neural Networks for Facial Expression Recognition***

Md. Saiful Bari Siddiqui (BRAC University & Bangladesh University of Engineering & Technology, Bangladesh); Sanjida Ali Shusmita, Shareea Sabreen and Md. Golam Rabiul Alam (BRAC University, Bangladesh)

Overfitting is a significant obstacle in classification tasks like Facial Expression Recognition. Despite repeated attempts to negate the effects of overfitting by various researchers, the issue persists. This paper introduces FedNet, a Neural Network architecture inspired by the federated aggregation and averaging technique used in Federated optimization, which proposes a method to learn from data situated separately in edge devices. Our study proposes dividing training data into multiple shards and training each data shard individually using the same neural network, then aggregating and averaging each model's parameters after every few epochs. Training multiple models on different data shards and averaging the learned parameters allows the model to learn from the entire dataset while avoiding overfitting on a particular data shard. Convolutional Neural Networks were implemented using the Extended Cohn Kanade and the FER-2013 dataset to conduct this study. Our federated averaging-based implementation of CNNs achieved 99.1% accuracy and 100% accuracy for 8 and 7 emotion classifications, respectively, on CK+, beating the benchmarks for this dataset. It also achieved 65.6% accuracy on FER-2013 without using any transfer learning or data augmentation. Our model shows significantly better resistance against overfitting, resulting in better generalization compared to the other existing methods.

PS1-4: PS1-4

Chair: Tosporn Arreeras (Mae Fah Luang University, Thailand)

13:30 ***Consumer behavior in Online Flash Sale: Partial least squares structural equation modeling (PLS-SEM) analysis***

Bui Thanh Khoa (Industrial University of Ho Chi Minh City, Vietnam)

Flash sale programs have shown outstanding success in the four-wave of the Covid-19 pandemic in Vietnam. This study aims to examine factors that affect consumers' attitudes towards flash sales programs, thereby influencing their purchase intention in a certain period during which programs take place. The research illustrated that attitude plays a crucial role in investigating consumer behavior during flash sales, considering five factors including perceived usefulness, flash sales information quality, website quality, perceived perishability, and perceived scarcity. Using the PLS-SEM method, this study analyzed data collected from consumers who have been participating in e-commerce platforms in Vietnam. The result showed that all the five factors positively affect attitude towards flash sales and explain nearly 60% of its variance. Perceived perishability has a more significant impact than other factors. Also, the study indicated the intermediary role of attitude towards flash sales about purchase intention on flash sales. Subsequent discussions will explore the implication of optimizing flash sales programs.

13:50 ***Exploratory Data Analysis on SARS-CoV-2 Variants in India: especially Omicron (B.1.1.529) as of 6th December 2021***

Sashikanta Prusty, Srikanta Patnaik and Sujit Kumar Dash (SOA University, India)

SAR-CoV-2 is now spreading around the world, resulting in increased hospitalization and catastrophic fatality. The genome for coronavirus disease is vulnerable to abnormalities, which leads to genetic distortion and immunity loss. A novel variant of concern (VoC) with a new mutation having Pango lineage B.1.1.529, namely Omicron by WHO, was first found in South Africa at the end of November 2021. As of date, this new variant has already been spread rapidly in more than 58 countries and no doubt including India. In this work, Exploratory Data Analysis (EDA) analysis has been taken on different types of Covid-19 variants to date, where Omicron has demonstrated to be more increased transmissibility and infectious as compared to other variants. EDA offers several graphical representations to a better comprehension of the data and generates statistics for numerical data

present in the dataset, as of 6th December 2021. Starting from 2nd December 2021 India has reported 23 new omicron cases within four days, which is a major challenge both for the doctors and government. Moreover, the EDA technique has been carried out for finding a significant correlation with the total number of Omicron cases as of the date in India using a scatter plot. Also, a conceptual design has been configured in this project that describes the whole process of how EDA analysis has been carried out and a Treemap that looks forward to outliers in all countries representing more than twenty-five covid-19 variants.

14:10 *Sentiment and Statistical Analysis of Customer Reviews for Strategic Decision on Positioning and Marketing*

Shreyas Jain Lodha (Symbiosis Institute of Digital and Telecom Management, India); Madhavi Damle (Symbiosis International University (SIU), India)

Customer sentiment is a significant insight for any of its markets. In our used case, analysis for online shopping is done, giving far more precise marketing information using Natural Language Processing (NLP). The method extracted customers' opinions and sentiments about apparel and how they were introduced online. Data was extracted from chats, blogs, and other open sources working for the women's apparel brands. A large standardized dataset of 2.3 million responses for data mining for frequency, trend, colors, apparel type, and preferences was used. Findings from this study stated that customers prefer shopping online out of convenience and technology aids, but women's apparel has its ebbs and flaws in the case of online shopping. The study gave insights to allow marketers to resolve online shopping customer issues by analyzing their sentiments; these were precise outcomes for apparel management and decision-making. The implications were the insights where the NLP analysis was further exemplified using The Boston Consulting Group (BCG) Matrix employed to assist marketers about the weaker and stronger products online. This also aided in categorizing the merchandise under cash cow, star, question mark, and dog together, improving their shopping experience and from the marketing team's point of view to make better marketing decisions about their products. This method gives a precise categorization for differentiation and the agility needed for online marketing. We use "Machine Learning models" like "Support Vector Machine and Naïve Bayes" to calculate the accuracy, precision, and recall. Precise results were obtained by exploring these models and algorithms in Python.

14:30 *Weibull Distribution for Claims Modelling: A Bayesian Approach*

Hamza Abubakar (Universiti Sains Malaysia, Malaysia)

The Weibull distribution is extensively useful in the field of finance, insurance and natural disasters. Recently, It has been considered as one of the most frequently used statistical distribution in modelling and analyzing stock pricing movement and uncertain prediction in financial and investment data set, such as insurance claims distribution. It is well known that the Bayes estimators of the two-parameter Weibull distribution do not have compact form and the closed form expression of the Bayes estimators cannot be obtained. In this paper and Bayesian setting, it is assumed that the scale parameter of the Weibull model has a gamma prior under that assumption that its shape parameter is known. A simulation study is performed using random claims amount to compare the performance of Bayesian approach with traditional maximum likelihood estimators in terms of Root Mean Square Errors (RMSE) and Mean Absolute Error (MAE) for different sample sizes, with specific values of the scale parameter and shape parameters. The results have been compared with the estimated result via the maximum likelihood method. The result revealed that the Bayesian approach behaves similar to the maximum likelihood method when the sample size is small. Nevertheless, in all cases for both methods, the RMSE and MAE decrease as the sample size increases. Finally, applications of the proposed model to the insurance claim data set has been presented.

14:50 *Optimizing Multiple Sequence Alignment using Multi-Objective Genetic Algorithms*

Sohan Kumar Yadav (Higher Education, Government of Uttar Pradesh, India); Sudhanshu Kumar Jha (University of Allahabad, Prayagraj, INDIA & MHRD, Govt. of India, India); Sudhakar Singh (University of Allahabad, India); Pratibha Dixit (King George's Medical University, India); Shiv Prakash (University of Allahabad, India); Astha Singh (Motilal Nehru National Institute of Technology, Allahabad, India)

The multiple sequence alignment (MSA) issues are contingent on dropping an MSA to a rectilinear sketch for every alignment phase. Though, these indicate the damage of information desired for precise alignment, and gap scoring rate evidence. Single objective and Multi-objective techniques can be applied to the MSA problem. MSA can be classified into the NP-complete class of problems. Due to this classification, the genetic algorithm (GA) and variants which effectively solved the NP-complete class of problems can also solve the MSA problem to maximize the similarities among sequences. In this work, the dynamic programming-based algorithm for solving the MSA problems in bioinformatics has been discussed. A novel approach based on

GA and variants is suggested for solving an MSA problem. MSA Problem can be visualized as multi-objective optimization, so the Non-dominated Sorting Genetic Algorithm-II (NSGA II) can be applied. The single-objective and the multi-objective optimization problem are mathematically formulated and constraints related to both the objectives are identified. An adapted GA and NSGA-II are suggested to the MSA optimization problems.

PS1-3: PS1-3

Chairs: Zafrul Allam (University of Bahrain, Bahrain), Justin Kraemer (Mae Fah Luang, Thailand)

13:30 ***Action Research on Turnover Intention in a Chinese Private High School Teachers: Conceptual Paper***

Poh-Chuin Teo and Theresa C.F. Ho (Universiti Teknologi Malaysia, Malaysia); Ling Suan Choo (University of Bahrain, Bahrain); Yu Tongchao (Rushan Economic Development Zone, China); Siripat Chodchuang (Prince of Songkla University Surat Thani Campus, Thailand)

The problem of employee turnover rate is a concern of most companies. For private schools, the resignation of teachers and the loss of teaching staff are also persistent problems. Research methodology and A mixed-method research approach has been proposed, and appropriate data analysis techniques will also be recommended. It is believed that through the analysis of quantitative and qualitative data, and effective intervention measures for schools could be developed in solving the institutional issue. Also, by further analyzing and evaluating the effects of intervention measures, continuous improvements can be made on the human resource management of the school in order to achieve a sustainable workforce. The potential outcomes this conceptual paper would be set as a good reference for private high schools that are suffering with high turnover issue.

13:50 ***A Decision Model for Talent related challenges in the Telecom Sector in India***

Deepika Pandita (Symbiosis Institute of Business Management Pune, Symbiosis International (Deemed) University, Pune, India); Anusaya Yadav (Symbiosis International(DEEMED University), Pune. & Vivekanand Education Society's College of Arts, Science and Commerce, India)

The purpose of this paper is to bring forth how the telecom sector, which has undergone waving changes in recent years, are confronting challenges in talent acquisition. The HR managers from the telecom sector in India were approached and interviewed. The Structured Interview process underlined the challenges of HR managers for talent hunt. It further explores the prominent resorted technologies when it comes to talent acquisition. In the end, the authors present findings after collating results of extensive literature search and primary data. In line with constraints identified, suitable recommendations are laid down backed up by a model that provides a quick guide to technological adoption prior to integrating technology into talent acquisition.

14:10 ***Bibliometric Analysis of Research Visualizations of Knowledge Aspects on Burnout Among Teachers from 2012 to January 2022***

Zafrul Allam and Muzaffar Asad (University of Bahrain, Bahrain); Nasir Ali (University of Jeddah, Saudi Arabia); Azam Malik (Prince Sattam Bin Abdulaziz University, Saudi Arabia)

Considering the significance of knowledge in today's challenging academic environment, this particular bibliometric analysis focuses exclusively on burnout among teachers. In the present study, we examine bibliometric analyses of burnout among teacher research papers published and indexed in Scopus. For this study, 2356 research papers published from 2012 to 2022 (up to January) were selected. Map was were generated using the VOS viewer software tool. In the analysis of findings, incremental knowledge was revealed including trends for annual publications, top authors, funding sponsorships, subject area, type of publication, top contributing countries in publication, and correlation with relevant factors of teacher burnout. According to this analysis, there was a high number of research papers published in the year 2021. The most notable publication was done by Burke, R.J., the Institute of Education Sciences supported the most research, Social Sciences is ranked highest with publications, and in terms of research papers articles contributed more and the U.S. published the most research papers followed by Spain. Most importantly, future researchers can use these findings as a baseline before starting a study on teacher burnout.

14:30 ***Decision Model in the Development of Technopreneurship and The Adoption of IR4.0 Technologies***

Amirul Shahnoel Noeh and Pg Rozaidah Pg Hj Idris (University Brunei Darussalam, Brunei Darussalam); Muhammad Anshari (Universiti Brunei Darussalam, Brunei Darussalam)

Technology-based entrepreneurial activities are not uncommon in developing nations and emerging high-income economies. Attaining, adopting and developing higher complexities levels with the advances of IR4.0 technologies conflated with the desire to embrace digitalisation accelerated by the global pandemic have raised the development of technology-based starts-up to the forefront and spurring new types of works. Yet there is some hesitancy to adopt this pathway for unclear reasons. This paper aims to determine the development of prospective entrepreneurs and existing mainstream e-commerce start-ups in Brunei Darussalam in adopting these new technologies. Furthermore, the paper will identify barriers, drivers, and how prospective newcomers' decision-making process navigates the current socio-economic and technological trends. This can be explained through inference to the various theories of entrepreneurship, anthropological and sociological theory within the context of Brunei Darussalam. A qualitative inductive framework based on exploratory approaches includes reviewing the literature on technology-based start-ups, entrepreneurship development, interviewing and collecting data from various key stakeholders within the innovation ecosystems. The output of this paper will be a decision model highlighting the paths that a start-up can take to adopt IR4.0 technologies.

14:50 ***Model of knowledge-intensive teamwork development***

Bui Thanh Khoa (Industrial University of Ho Chi Minh City, Vietnam); Khánh Quốc Nguyễn (BTEC FPT International College, Vietnam)

Knowledge, indubitably, is significant capital in stimulating economic and organizational growth. Nevertheless, knowledge management in association with effective teamwork has still been considerably challenged in Vietnam. Inherited from the explicit knowledge management process and indispensable dimensions of the knowledge economy, this academic paper aims to develop a pertinent model of knowledge-intensive teamwork in the Vietnamese organizational context. Specifically, there are three dependent variables: education background, leadership, and Information and Communications Technologies (ICT) facility, whereas independent variables are knowledge acquisition, knowledge creation, knowledge application, knowledge revision, and knowledge-intensive teamwork. A quantitative analysis via an online questionnaire is undertaken with 306 participants working in Vietnam's production and service business sectors. The research results indicate that educational background, leadership, and ICT facility in the teamworking mechanism contribute to smooth operations of the whole knowledge management process, while coherent synergy of phrases in this process furnished knowledge-intensive teamwork. Therefore, the findings in this study underpin the framework for the upgrowth of continuous learning spirit, accountability, and collaboration of teamworking capabilities for the Vietnamese workforce.

PS1-8: PS1-8

Chair: Sagar Balu Gaikwad (Vidyalankar School of Information Technology, India)

13:30 ***Role of Work Engagement among Nurses Working in Government Hospitals: PLS-SEM Approach***

Sagar Balu Gaikwad (Vidyalankar School of Information Technology, India); Lata Swaminathan (NES Ratnam College of Arts, Science and Commerce, India)

Nursing is a profession that aims to protect, promote, and health of the people suffering through treatment. The current research studied job performance, work engagement, and turnover intentions among the nurses using the validated scales. The researcher tried to explore the impact of work engagement on job performance and turnover intention using PLS-SEM. The impact of job satisfaction on turnover intention is also explored. A validated scale on work engagement, job performance, and turnover intentions is used to collect the data from respondents. The researcher found that there is a significant positive relationship between work engagement and job performance, and there is no significant relationship between work engagement and turnover intentions among nurses working in government hospitals. An insignificant relationship is also found between job performance and turnover intention. The current research is helpful to all the government hospitals to identify work engagement

levels among nurses. The current research also describes the state of turnover intention among professional nurses. The current research describes the job performance level of nurses in government hospitals.

13:50 ***The Role of Government Ownership Towards the Performance Management Decisions in the Government-Linked Companies***

Amiruddin Haji Ismail (Universiti Brunei Darussalam, Brunei Darussalam)

Having government ownership of the government-Linked companies can influence the company's operation. However, literature mainly discusses the macro level's influence, such as financial performance. Few studies had looked at the micro-level management of these companies, especially on the organization's performance management. It can be assumed that these companies are responsible for their performance management; however, government ownership influences management decisions upon closer look. They may affect the setting up of the key performance indicators, the rewards for employees, and the rating system in the company. Hence, this research tries to shed light on how government ownership influences the performance management of these government-linked companies in Brunei Darussalam. The methodology used here is the semi-structured interviews with several government-linked companies and the investment holding company managing these companies. Future research can extend more on the government's management decision role towards the government-linked companies.

14:10 ***Work From Home After Covid-19: Machine Learning-Based Approach to Predict Employee's Choice***

Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Anuradha Herath, Ashansa Wijeratne and Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka)

Prior to the Covid-19 pandemic, Work from Home (WFH) was becoming an increasingly common practice, and during the pandemic, millions of employees across the globe were forced to shift into full-time WFH. It is expected that organizations will continue the WFH in a hybrid mode along with Work From Office (WFO) even after the pandemic. This study aims to predict the choice of employees on continuing WFH after the pandemic. The data set was collected using an online questionnaire shared among a sample of employees engaged in WFH during the pandemic. Naïve Bayes Artificial Neural Network (ANN), Random Forest, and Ensemble Learning-based approaches were used to generate the prediction models. Ensemble Learning-based approach was the best classifier compared to the other three classifiers and it obtained a 91.6% accuracy value. Naïve Bayes showed the lowest performance.

14:30 ***Females' Travel Intention in Post-Pandemic using Structural Modeling Analysis***

Chanittha Chansuk, Tosporn Arreeras, Chalailuk Chiangboon, Sorrawich Pumjampa, Nattawat Chotikool, Kantinun Phonmakham, Thanmit Yanasoi and Ratthanan Buddee (Mae Fah Luang University, Thailand)

Female tourists have emerged as one of the most important markets for the tourism sector. However, Coronavirus disease, also known as COVID-19, has led to a significant loss; the number of tourists has declined since the beginning of 2020. As a result, we aim to investigate the behaviors of female tourist between pre- and post-pandemic periods in Thailand. A total of 340 valid questionnaires were collected using an online survey. The valid datasets were examined using Structural Equation Modeling (SEM) with the theory of planned behavior (TPB) extension. Essential behaviors factors were considered, consist of tourist attitude (TA), travel norms (TN), and perceived behavioral control (PBC). In addition, according to the research gap, we included the hygiene constraint (HC) factors to examine Thai female tourists' intention to travel in the post-pandemic. The outcomes of this study will enable us to understand women's behaviors and the variables affecting travel intentions with aim of support with domestic tourism management after the crisis, ultimately boosting the ailing tourist industry.

14:50 ***The Competence Development of Local Communities in Chiang Rai for MICE Community - Based Tourism (CBT) Travelers***

Sarutanan Sopanik (Mae Fah Luang University, Thailand)

This research is considered to be a case - study research which aims to explore the competence level of three selected

community - based tourism (CBT) communities in Chiang Rai, Thailand, for high-value MICE travelers which is considered to be an untapped market for local CBT residents. The framework of this research derives from tourism organizations in Thailand and overseas with the intention to promote CBT tourism for MICE traveler groups. They define and evaluate MICE industry competence underpinned by local community management, human capital and natural resources which differ from typical stakeholders in the MICE industry. As a result, the new set of MICE competence specifically for MICE CBT is to be created as a pilot research project for MICE CBT in Thailand.

PS1-5: PS1-5

Chairs: Vinay Kukreja (Chitkara University, Punjab, India), Surapong Uttama (Mae Fah Luang University, Thailand)

13:30 ***Automated Cars via Artificial Intelligence (AI)***

Satyam Mishra (Vietnam National University - International School, Vietnam)

This paper discusses researching a vehicle model using artificial intelligence; training its neural network using the AlexNet model, using YOLO for object detection phase, and for practical deduction and judging component we have used Open Neural Network Exchange format. Our Car model is agile and cost-efficient. It detects objects efficiently in front of it and movement of it is smooth. It moves through sensors in motors which makes it different than other models in the world. We created and managed to deploy a deep learning system using real-world visual input for everyday objects. We used a novel deep learning-based obstacle avoidance perspective for practical object detection training. Special data gleaned via the use of technologies and various sensors in this part could alter skill demand and achieve security levels. We built it from scratch and trained this model to avoid collision and follow a given path by using deep neural network-based training.

13:50 ***Crowd Analysis in Video Surveillance: A Review***

Ankit Tomar (Graphic Era Deemed to be University, India); Santosh Kumar (Graphic Era University, Dehradun, India); Bhasker Pant (Graphic Era Deemed to be University, India)

Crowd behavior investigation in images/videos is an important task applied in areas such as people counting, density estimation, emotion recognition, motion detection, and flow analysis, etc. The researchers devoted an excellent quality of work to deal with public issues such as crowd control, traffic monitoring, urban planning, vehicle counting in real-time; however, humanity did not get much success in handling these issues due to the limited cost of energy and time. For evaluation metrics, we need a year-wise analysis of used datasets, publications methodologies, and their performance, which is expected to yield good predictions and conclusions. Therefore, in this work, we have systematically and comprehensively revisited five year studies that conducted crowd analysis in video using deep learning techniques to make more effective research development and progress. We have got some new future directions from some of the prestigious survey works, which is a novel aspect of this study, that would provide potential and reliable solutions for investigating crowd behaviour in videos.

14:10 ***Applications of Internet of Things in Construction Projects***

Khalid Mhmoud Alzubi (Universiti Teknologi PETRONAS, Malaysia & Albalqa Applied University, Jordan); Wesam Salah Alaloul (Bandar Seri Iskandar & Universiti Teknologi PETRONAS, Malaysia); Marsail Ghaleb Al Salaheen (Universiti Teknologi PETRONAS & AlBalqa Applied University, Malaysia); Abdul Hannan Qureshi (Persiaran UTP, Seri Iskandar, Perak & Universiti Teknologi PETRONAS, Malaysia); Muhammad Ali Musarat and Aawag Mohsen Alawag (Universiti Teknologi PETRONAS, Malaysia)

The Internet of Things (IoT) is prevalent in almost all aspects of various industries and construction is not exempted. The implementation of IoT in construction improves the way infrastructure and buildings are managed, built, and monitor. Also, it is decreasing the limitation of traditional methods like error-prone, time and cost consuming, and exposure to dangers. The aim of the study is to review areas of implementation of the IoT in the construction industry. The research provides insight into several aspects where IoT can be adopted in the construction sector like safety, decision making, monitoring, and productivity

and performance applications, and the limitations of technologies used. This helps in understanding the areas where IoT can be implemented in the construction industry for better enhancement. The IoT adoption improves in completing construction projects with more convenience and how the use of new technologies for monitoring will result in an effective monitoring way. This leads to collect the data about the construction site effectively, accurately, and in real-time which will help the management to take effective decisions.

14:30 ***Performance Analysis of Patch Antenna for Wireless Communication***

S Kannadhasan (Cheran College of Engineering & Raja College of Engineering and Technology, India)

The design and optimization of rectangular patch antennas, as well as the comparison of H-shaped patch antennas and rectangular patch antennas, have been explored in terms of important characteristics including S-parameters, VSWR, axial ratio, bandwidth, and operating frequency. Using the FEM (Finite Element Method), a fresh method to optimization is used. This FEM approach allowed for more accurate calculations in the design of a Microstrip patch antenna, as well as an examination of the effects of different design elements such as antenna dimensions (L & W) and substrate. The suggested antenna is used to operate the various frequencies from 5.5 GHz to 10.5 GHz. A 50-microstrip feed line feeds the planned 'H' shaped Microstrip antenna. The design has been altered to reflect the improved outcomes.

14:50 ***Image-Based Wheat Mosaic Virus Detection with Mask-RCNN Model***

Deepak Kumar (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Wheat is one of the most vital crops around the globe. Due to wheat mosaic virus disease, there are a huge amount of yield quality losses. The mosaic virus is transmitted through curl mite summering hosts. Once the mosaic virus is transmitted, the whole wheat plant is damaged which decreases the wheat grain quality. Therefore, the detection of a mosaic virus on the wheat leaf is detected through the Mask-RCNN model. A total of 15,536 wheat images were captured through Canon camera in the Punjab region. Each wheat healthy leaf and mosaic virus in each wheat leaf was labelled through the VOTT tool. The individual wheat leaf and mosaic virus labelled data were used as ground truth data. The resnet-50 is used as the backbone in the Mask-RCNN model. The Mask-RCNN model segments each wheat leaf and detects the mosaic virus on each individual leaf. For segmentation of each individual leaf and mosaic virus disease detection, the mask-RCNN model achieves 88.19% and 97.16% detection accuracy properly.

Wednesday, March 23 13:30 - 14:50 (Asia/Bangkok)

PS1-9: PS1-9

Chair: Teerapun Tadniyom (Mae Fah Luang University, Thailand)

13:30 ***New Technology for Synthesis Gas Production from Energy Willow as a Sustainable Solution for the Sustainable Development of Ukrainian Energy Industry***

Andrii Panchuk, Myroslav Panchuk and Sviatoslav Kryshtopa (Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine)

At present, one of the main problems of Ukrainian economy is the insufficient provision of energy resources, as well as the reduction of energy intensity and carbon intensity of production. At the same time, the country has a significant potential of feedstock in the form of biomass for the development of renewable energy industry. Cultivation and processing of energy crops is considered in the paper as a means of additional production of energy, improvement of the environmental situation, and achievement of sustainable development goals. A new technology of synthesis gas production from energy willow was suggested. The technology is based on the process of oxidative torrefaction with further disposal of volatile substances and their thermal conversion into synthesis gas. Introduction of the developed technology is a significant step towards the improvement of torrefaction process, which is used to improve the technical properties of biomass and has significant sustainability benefits.
Keywords - sustainable solution, energy willow, oxidative method of torrefaction, synthesis gas.

13:50 ***Application of spatial remote sensing for air quality estimation: the case of the Jorf Lasfar region, Morocco***

Abdelmejid Rahimi, Ikram El Mjiri, Mohammed Bounif and Abdelkrim Bouasria (Chouaib Doukkali University, Morocco)

The Jorf Lasfar region, which is the subject of this study, is characterised by an establishment near its port, of OCP factories, a thermal power station, hydrocarbon storage units, and numerous establishments specific to the chemical agro-food sector that are likely to emit atmospheric aerosols. Consequently, air quality monitoring has become a necessity for assessing and monitoring the impact of air pollution on the health of the population. In this context, to highlight the state of the air, this region is only equipped with approximately ten permanent ground measurement stations. Unfortunately, insufficient ground-based air pollutant measurement stations have generated accurate microparticle concentration maps on a fine scale. Therefore, to compensate for the lack of measuring stations, we resorted to satellite remote sensing by exploiting the relationship between the air quality measurements provided by existing measuring stations and satellite images. Thus, given the correlation between aerosol rates measured in situ and data extracted from Landsat satellite images, maps derived from atmospheric scattering and surface temperature have enabled the extraction a certain amount of useful information to better understand atmospheric pollution in the Jorf Lasfar region. An analysis of these maps showed that the most significant correlation, in particular, was between aerosols in suspension and surface temperature (LST), as deduced from the thermal infrared band, with a correlation coefficient R of 0.79. Another correlation with atmospheric scattering calculated using the atmospheric correction of the satellite image by the FLAASH algorithm is also noteworthy but is relatively less significant than the first. Therefore, maps of atmospheric diffusion and surface temperature derived from the processing and analysis of Landsat satellite images will be considered a new source of information, allowing for a better understanding of the spatial distribution of aerosols, especially in areas where the number of measuring stations is very limited, such as the Jorf Lasfar region.

14:10 ***Algerian Strategy Planning on Workforce Allocation between Sectors at the 2030 Horizon Using Fuzzy Goal Programming Approach***

Mohammed Seghir Guellil (POLDEVA Laboratory, Algeria); Mohamed Hadj Ahmed (Faculty of Economics, Business and Management Sciences, MCLDL Laboratory, Algeria); Samir Ghouali (Faculty of Sciences and Technology, Mustapha Stambouli University, Algeria); Mostéfa Belmokaddem (Faculty of Economics, Business and Management Sciences, Algeria); Mohamed Benbouziane (University of Tlemcen & Laboratoire MIFMA, Algeria); Edeh Michael Onyema (Coal City University Enugu, Nigeria)

Goal programming models provide a method for analyzing and understanding multi-criteria and their effects on a subject. Real-world problems include uncertain data, which makes Fuzzy Target Programming (FGPs) most common. In this paper, we propose a FGP model that integrates optimal resource allocation to at the same time fulfill prospective goals in economic growth, energy use, workforce, and greenhouse gas (GHG) emission reduction linked to key economic sectors of Algeria. The model provides important learning opportunities for future leaders in key areas of masterminding and leadership. We demonstrate the legitimacy and materiality of the model with a numerical case that allows us to substitute non-renewable energy with renewable energy, and an optimal workforce allocation between sectors in Algeria.

14:30 ***A Study of Role-Play Method and Human Augmentation to Enhance Digital Content Creator***

Panit Thongdee (King Mongkut's University of Technology North Bangkok, Thailand); Pinanta Chatwattana (Electronics Engineering Technology, Thailand); Prachyanun Nilsook (King Mongkut's University of Technology North Bangkok, Thailand)

This research has designed and developed a The Role-Play Method Human Augmentation Learning Model to Enhance Digital Content Creator, aiming 1) to study and synthesize the framework for developing The Role-Play Method Human Augmentation Simulation Learning Model to Enhance Digital Content Creator, 2) To study the possibilities. Development approaches as models, there are 50 undergraduate students in digital media technology, Rajamangala University of Technology Tawan-Ok. Research content uses digital film production course content. Digital Media Technology Program in Multimedia Technology, Rajamangala University of Technology Tawan-Ok, 6 lessons, trialled in semester 2, academic year 2022, the method of conducting research is divided into 5 phases: Phase 1 synthesis of conceptual framework for developing The Role-Play Method Human Augmentation Learning Model to Enhance Digital Content Creator Phase 2 Synthesis of substanceist features. The

expected benefit is that it competes with Digital Content Creator that are suitable for the context of Thailand. Educational institutions that offer courses in relevant disciplines have guided them with Role-Play learning methods to develop Digital Content Creator.

Wednesday, March 23 13:30 - 15:10 (Asia/Bangkok)

PS1-6: PS1-6

Chair: Wan Hussain Wan Ishak (Universiti Utara Malaysia & College of Arts and Sciences, Malaysia)

13:30 ***Investigating on adolescent traveler habits, before and intra COVID-19 pandemic: the case study of Chiang Rai***

Tosporn Arreeras and Chanittha Chansuk (Mae Fah Luang University, Thailand); Mikiharu Arimura (Muroran Institute of Technology, Japan)

The COVID-19 has triggered an unprecedented worldwide crisis. Transportation has been one of the most significantly impacted. This paper examined the factors and satisfactions that influence the dynamic of selecting a mode of transportation among Mae Fah Luang University students. Before developing the inquiries and collecting 399 responses via the Internet stage, the analyst conducted inside and out interviews with 20 understudies. According to the research, students' travel habits changed both before and during the COVID-19 epidemic, which revealed that both travel determinants and public service efficiency judgments were important. When the COVID-19 comes into effect, impacted students need to change their travel behaviors accordingly.

13:50 ***Acceleration Of International Tourism Improves Digital Payments Usage: The Case Of Thailand***

Dzakiyy Hadiyan Achyar (Mae Fah Luang University, Thailand); Zata Hasyyati (Universitas Panca Budi, Indonesia); Hazhiyah Yumni (Universitas Malikussaleh, Indonesia); Fathir Wafda (PT Bukalapak.com Tbk, Indonesia)

This research examines the state revenue from international tourism on the rising usage of digital payment in Thailand from 2011 to 2020. The data are analyzed through multiple linear regression using the annual data of the World Bank and Thailand government. Surprisingly, the international tourism variable can explain 91 percent of the variation in digital payment usage in Thailand with the model is proven to be fit. Jarque Bera test shows the residuals are normal. Breusch-Godfrey Serial Correlation Lagrange Multiplier test proves that the residuals are free from serial correlation. Breusch-Pagan Godfrey depicts that the residuals are free from heteroskedasticity. In conclusion, there is a significant influence of the international tourism receipts on accelerated usage of digital payment in Thailand.

14:10 ***A Web-based Application for Interesting Place Recommendation***

Wan Hussain Wan Ishak (Universiti Utara Malaysia & College of Arts and Sciences, Malaysia); Fadhilah Binti Mat Yamin (Universiti Utara Malaysia & UUM College of Business, Malaysia)

Today, the Internet has become one of the most essential media for disseminating information, particularly in the field of tourism. When it comes to organising a trip, most people will seek assistance. Existing travel websites, on the other hand, lack a suggestion feature that can recommend ideal locations depending on the wants and requirements of customers. As a result, users had difficulty planning their vacations. In this article, an interesting place recommender system for travelers is proposed. The proposed system is a website application that provides a list of recommended places for users based on their background. In greater detail, this recommender system will compare the users' information to the history of other tourists and suggest a suitable trip destination for the user. The waterfall model, which is a step-by-step approach to designing an application, was used to develop this application. The usability testing had been conducted on 31 respondents by inviting them to use and test on the system. The results of the usability testing show that the proposed application is effective in assisting users in finding the information they seek. The respondents also addressed that they feel more convenient in planning their vacation with the support from the system.

14:30 ***A study into COVID-19 pandemic impacts elderly decision on shopping trip***

Inchalita Hiruntronchirapat, Kanisara Paripunyo and Tosporn Arreeras (Mae Fah Luang University, Thailand)

The aim of this study is to reconnoiter factors that affect travel behavior and decision making for a shopping trip of the elderly during the before and intra that COVID-19 pandemic. This is a quantitative that intends to determine key factors that affect elderly behavior in terms of private and public mode transportation. The study collected data from 400 elderly people of Thai nationality. Data was collected through Cochran unknown sample size computation from a population of people who were aged sixty and over in Thailand. Exploratory factor analysis was practiced for data analysis and grouping variables by rotation varimax that appear three main factors which were comfort travel; factors arising from the transportation service, cautious; the effects of external stimuli that raise concerns about the spread of the epidemic and reliability; travel convenience and assurance. The findings should be useful and helpful data source in term of doing research development, planning and in any purposes for transportation department or any organization.

14:50 ***Leadership style and its relationship to work satisfaction of the employees in the hospitality industry: a case study of AVANI Hotel and Convention Centre, Khon Kaen, Thailand***

Proychai Klakayan (Mae Fah Luang University, Thailand)

The purpose of this research is to explore the relationships between managers' leadership styles and employees' work satisfaction in the hospitality industry, a case study of AVANI Hotel and Convention Centre, Khon Kaen, Thailand. The study focused specially on the Path-Goal leadership theory from House (1971). This theory divides leadership styles into four types, which are directive, participative, achievement-oriented and supportive. The researcher then related these to the work satisfaction of employees in the AVANI Hotel and Convention Centre using secondary and primary researches. The primary research was conducted in two phases, which are quantitative and qualitative.

The results of this findings show that the predominant manager leadership style of AVANI Hotel and Convention Centre was participative and it had a direct positive influence on work satisfaction, such as the work environment. However, the employees of the AVANI Hotel and Convention Centre demonstrated less satisfaction with the pay/salaries, the work itself and the promotion as satisfier factors and more satisfaction with factors such as the work environment and the recognition. Some recommendations the researcher made, based on the finding, are improving the employees' performance and job rotation.

Wednesday, March 23 15:10 - 15:15 (Asia/Bangkok)

Break: Coffee Break

Wednesday, March 23 15:15 - 16:00 (Asia/Bangkok)

SP1-1: Semi-Plenary 1-1

Chair: Sawsan Hilal (University of Bahrain, Bahrain)

A multiple criteria approach for constructing a pandemic impact assessment composite indicator: The case of Covid-19 in Portugal

SP1-2: Semi-Plenary 1-2

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

Circular economy to combat climate change issue

Thursday, March 24 8:00 - 8:30 (Asia/Bangkok)

ATK+REG: ATK Testing and Registration

Thursday, March 24 8:30 - 10:10 (Asia/Bangkok)

PS2-6: PS2-6

Chairs: Narat Hasachoo (Mae Fah Luang University & School of Management, Thailand), Sumit Sakhuja (Chitkara University Punjab, India)

8:30 ***Predictive Analytics of Human Errors in the Fireworks Industry***

N Indumathi and R. Ramalakshmi (Kalasalingam Academy of Research and Education, India); Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Tayo Badrudeen (Obafemi Awolowo University, Nigeria); Chukwunonso Mmonyi (Afe Babalola University, Nigeria)

The town of Sivakasi in Tamil Nadu's Virudhunagar district in India produces majority of the country's consumption of firework items. Handling numerous chemicals is a necessary part of the firework industry's manufacturing process. As a result, the firework industry is commonly reported to be highly dangerous because of the hazardous nature of the chemicals used to create the sparkling effects during the ignition of firework crackers. Prior research has focused on harmful behaviors and hazardous conditions, pointing to human error as the primary cause of many accidents. According to the findings of the study, the majority of explosions were caused by the improper handling of hazardous chemicals and carelessness when making fireworks. Therefore a model was presented in this paper which aims to assess the likelihood of human error in the fireworks industry. The proposed method uses task analysis and prediction of human error to shape the performance elements. The model can also be used to examine potential accident scenarios. The results show that the presented greedy-based process compared with the rule mining-based approach gives better accuracy and outcomes for the prediction of human error possibilities in the fireworks industry.

8:50 ***A Literature Review on the Biomechanical Properties of Soliderability Materials***

Akanksha Ghai and Gaurav Kalia (Chitkara University, India)

Soliderability materials is playing a vital role for existence of human beings. The production of bio-implantation metallic alloys application has been discovered to focus on providing structural components with excellent biocomputing of chemical/ mechanical/biological processes. As there is a demand for extended human lifespan and implantation in patients of younger age groups, the fabrication of metallic alloys for bio-implantation application is focused on producing structural materials with extremely excellent mechanical, chemical, and biological biocompatibility. Biodegradation of the substances for example Zirconium (Zr), Titanium, Columbium, Molybdenum and Tantalum were used to create Ti alloys with high mechanical characteristics and a low Young's modulus. As a result, a new awareness of the rise of low-cost alloys with a lower point where it changes its stage is Ta, Cb, Mo, and Tungsten, emerged. It is accomplished by replacing these metals with less expensive, delinquency and soliderability metals including iron, manganese, tin, and silicon, which have strong mechanical qualities and do not degrade. The mechanical characteristics of soliderability materials are also shown in this research. As a result, Zinc (Zn), Magnesium (Mg), and Ti are commonly employed in biomedical materials to improve mechanical qualities.

9:10 ***Bumper Beam Composite Material Selection using Fuzzy Multi-Criteria Analysis***

Golam Kabir (Industrial Systems Engineering University of Regina, Canada); Sehul Rajendra Mehta and Anaamalaai Annamalai Senthilnathan (University of Regina, Canada)

Material selection has long been seen as a critical activity in both the design and product development processes. Inappropriate material selection can result in the product being remanufactured and reproduced at a later stage of development. This article conducts a decision-making study of bumper beams to avoid such scenarios, assisting designers in material selection. To accomplish this, a hybrid multicriteria decision-making analysis (MCDA) approach combining the fuzzy analytical hierarchy process (AHP) and the fuzzy technique for ranking preferences by the similarity of ideal solutions (TOPSIS) was designed. Carbon fibre reinforced in an epoxy matrix was discovered to be a more appropriate material for vehicle bumper beams. This

study will assist designers and product development personnel in making the optimal material selections for the automobile sector.

9:30 ***Evaluation Model for Operational Plans in the Business Macro Process of Reverse Logistics***

Marcele Elisa Fontana and Layza Melo (Universidade Federal de Pernambuco (UFPE), Brazil); Jose Leao (Universidade Federal de Pernambuco, Brazil)

The business macro process (BMP) of reverse logistics (RL) is formed by four operational plans, which in turn are composed of various processes. This article proposes a decision-making model based on identifying facilitators and barriers factors, helping managers evaluate operational plans in the BMP of RL in the company. For this, the model incorporates the Fuzzy Picture Set Fuzzy (PSF) to evaluate the influence of these factors and the MABAC method to aggregate the evaluations obtained on PFS. A case study was adopted to apply the evaluation model developed as a research strategy. As a result, the model was able to assist managers in evaluating the factors that most positively or negatively impact the execution of each operational plan in RL, reducing the manager's cognitive effort and directing the company's future investments.

9:50 ***Urban Consolidation: A Case For Food And Beverages Industry In Singapore***

Sumit Sakhuja (Chitkara University Punjab, India); Umang Soni (Netaji Subhas Institute of Technology, India); Chetan Sharma (Chitkara University Himachal Pradesh, India)

Urban logistics is a by-product of the economic activities that keep cities running smoothly. However, it has negative externalities such as traffic congestion and pollution, and it has an impact on the food and beverage business, which is affected by logistics activities. Inefficient last-mile delivery from suppliers to retailers results from deliveries being done using vehicles (vans) that do not run in full truckload (FTL). As a result, transportation resources are being wasted. Supplies in food and beverage supply chains are primarily perishable, and determining the appropriate inventory levels to maintain is a problematic issue. When food distribution is decentralized, it results in a high frequency of deliveries, leading to higher delivery costs. When it comes to logistics network design, the challenge at hand could be classified as one in which crucial decisions regarding facilities, modes of transportation, frequency of delivery, capacity, and pricing must be made. The purpose of this study is to examine two significant aspects: the logistics patterns of urban food deliveries and the design of the model for last-mile delivery. Another author aims to develop the last mile redistribution model for final delivery, which is proposed in the paper as a solution technique for data collection and analysis.

PS2-1: PS2-1

Chair: Wangchuk Rabten (School of Management, Mae Fah Luang University, Thailand)

8:30 ***Use of VR Technologies for Better Healthcare Decisions***

Somit Asthana and Prasanna Kulkarni (Symbiosis International Deemed University, India)

New technological advancements like Augmented Reality (AR), virtual reality (VR), and Extended Reality (XR) are transforming conventional healthcare. Speedy developments in connectivity and "e-learning" have accelerated distribution of simulation techniques and structured courseware. With development of 5G and low latency technology, the application of AR/VR is becoming possible in medical science. Post pandemic, a new normal of hybrid healthcare services would emerge. These futuristic technologies will support healthcare industry operations with clinical documentation, administrative workflow and patient outreach. They are also offering advanced support such as image analysis, mobile treatment, and patient monitoring. This study looks at some of the real-life use cases of VR technologies in different verticals in healthcare sector. They can also be used for training and education purposes to instruct technical and non-technical skills. The simulator-based learning can be far more effective than conventional training. This study discusses many opportunities and challenges for healthcare institutions, regarding the implementation of contactless services and use of new and emerging technology trends. Based on the study of the technology and its feasibility, it discusses how VR technologies can lead to better healthcare decisions. It also discusses the scope and practical applications of wearable devices. which include head gear such as VR headsets, cameras, sensors, GPS, solid-state compasses etc.

8:50 ***Boosting Breast Cancer Classification from Microscopic Images using Attention Mechanism***

Chiagoziem Chima Ukwuoma and Gilbert C. Urama (University of Electronic Science and Technology of China, China); Md Belal Bin Heyat (Shenzhen University, Shenzhen, China); Haider Khan (Orthopedics Surgery West China Hospital, China); Faijan Akhtar (University of Electronic Science and Technology of China, China); Mahmoud Saleh Masadeh (Hijjawi Faculty for Engineering, Yarmouk University, Irbid, Jordan); Zhiguang Qin (University of Electronic Science and Technology of China, China); Chukwuemeka S. Ibegbulam (Federal University of Technology, Nigeria); Fiasam Linda Delali (University of Electronic Science and Technology of China Chengdu, Canada); Omar AlShorman (Najran University, Saudi Arabia)

Attention mechanism is one of the most recent and powerful deep learning approaches which have shown tremendous performance in detection and classification tasks, including medical imaging. Breast cancer is one of the leading causes of death among women worldwide; thus, early detection of this malignancy will help to reduce the number of fatalities. The accurate classification of benign and malignant tumors in microscopic breast images can give an efficient and relatively low-cost technique for breast cancer early detection. This paper proposes a deep learning model based on an attention mechanism. The proposed attention mechanism derives its input features from pre-trained models and passes its output through a Multilinear perceptron and SoftMax for classification. We trained all models on the ICIAR2018 Grand challenge Breast Cancer dataset and compared them with the pre-trained and ensemble models. For quantitative analysis, validation tests were conducted using the performance metrics for each approach. The suggested approach is proven successful, with classification results improving by +1-6%, potentially reducing human errors in the diagnosis process. Furthermore, our method outperforms state-of-the-art approaches in terms of accuracy, with a +3-8% improvement in performance results.

9:10 ***Big Data in Healthcare Transformation: A Short Review***

Ebrahim Abdulwasea Abdullah Ghaleb and Dhanapal Durai Dominic (Universiti Teknologi PETRONAS, Malaysia); Akram A. Almohammedi (South Ural State University, Malaysia); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia)

With the rising expense of healthcare and rising health insurance premiums, preventive healthcare and wellness are necessary. Additionally, the new wave of medical record digitization has ushered in a paradigm change in the healthcare business. As a result, the healthcare business is experiencing a surge in data volume, complexity, variety, and timeliness. As healthcare professionals explore ways to reduce costs while enhancing care processes, delivery, and management, big data appears as a viable option with the potential to alter the sector. This paradigm changes from reactive to proactive healthcare has the potential to result in total cost savings and eventually economic development. However, while the healthcare business leverages the potential of big data, privacy concerns remain a top priority as new threats and vulnerabilities emerge. We describe the state-of-the-art privacy challenges in big data related to the healthcare business in this study

9:30 ***Indian Healthcare Infrastructure Analysis during COVID-19 using Twitter Sentiments***

Noor Fatima, Mohd Belal, Kaushal Kumar and Rumi Sadaf (Aligarh Muslim University, India)

The COVID-19 pandemic has wreaked havoc on the worldwide economy. We employ semantic analysis to compare and assess the healthcare infrastructure of different Indian states with varying population and GDP levels. The goal is to (1) determine the relative lag in medical resources by state, (2) examine the states' responses to the COVID-19 economic crisis, and (3) recommend potential investments shortly based on the COVID-19 pandemic's findings. Our approach benefits from semantically analyzing tweets at the height of the most horrific second wave, which allows us to catch the tremors and quick shifts induced by wide-scale deaths. To approximate the infrastructure metrics, we leverage the social attitudes from Twitter data. The findings reveal that the lower expenditure on medical infrastructure is the primary challenge for the majority of the states in the country. Our research shows how data from state and city-specific Twitter posts may be utilized to comprehend local issues and opinions around healthcare leading to more directed and widely agreeable social media content-based rules.

9:50 ***COVID-19 vaccination decision-making approach and the sentiments of Indian Citizens***

Shubham Chandel (Symbiosis International Deemed University, India); Saikat Gochhait (Lavale & Symbiosis International: Deemed University, India)

A new virus was unearthed in the year 2019, and the entire world was struck by a pandemic. Several different companies and institutions collaborated to produce the vaccine. The definitive answer to the coronavirus pandemic has been outlined as the implementation of a COVID-19 vaccine capable of restricting the virus's spread. The Indian government recently scheduled and launched a large-scale vaccination campaign to combat the covid 19 vaccine. [1] However, there has been some scepticism among citizens, which is due to various reasons. COVID-19 was declared as a pandemic which was a global health crisis. We are now in the year 2021, but normalcy has yet to return, and many parts of the country remain in lockdown. The only way to stop the virus's spread was to develop a COVID-19 vaccine, which was recognized as the definitive response to the COVID-19 pandemic. [2]Numerous organizations concentrated on the vaccine's development. The most effective way to prevent any pandemic is to vaccinate the common population, including the current Coronavirus crisis [3]. There are several factors that cause cynicism in the minds of the common human being when it comes to COVID-19 vaccines. We'll look at different perspectives and sentiments about the Covid 19 vaccine amongst Indian citizens. We used social media posts as a source of information for this. We used sentimental analysis in Study 1 to see how Indian citizens' attitudes and sentiments about the COVID-19 vaccine changed throughout the COVID-19 crisis. we have performed a literature review to comprehend the critical problems that have created concern in the general public regarding the COVID 19 vaccine. [4] "Vaccination and COVID-19" were the key search terms. We looked for studies that were published during the COVID 19 pandemic and that reported on the phenomenon of vaccination.

PS2-2: PS2-2

Chair: Kariya Ngamsomsuke (Mae Fah Luang University & School of Management, Thailand)

8:30 ***A Transfer Learning-Based Deep CNN Approach for Classification and Diagnosis of Acute Lymphocytic Leukemia Cells***

Leo Dominick C Magpantay (Batangas State University, Philippines)

Leukemia is a serious cancer disease that affects children and adults, and it is classified as acute or chronic. Acute Lymphocytic/ Lymphoblastic Leukemia (ALL) is the most prevalent type of blood cancer and one of the leading causes of death. This type of cancer invades the blood and spread through neighboring organs and body systems. To classify cancer cells and non-cancer cells, specialists need to perform manual diagnosis through inspection of cell images under microscope and provide labels through annotation. However, this manual microscopic analysis is a tedious and may lead to false diagnosis. With this concern, the author proposed a computer-aided diagnosis method using a transfer learning-based deep learning approach. This study, YOLOv3 model is utilized to train a deep learning model that will classify ALL and normal cell. The model produced promising results as it has a training loss of 2.8% or a 97.2% training accuracy and a validation loss and accuracy of 2.18% and 97.82%, respectively. Based on model evaluation, the model has a mAP value of 99.8% as well. YOLOv3 was shown to be a useful tool for distinguishing leukemia cells from non-leukemia cells

8:50 ***Deep Transfer Network of Knee Osteoarthritis Progression Rate Classification in MR Imaging for Medical Imaging Support System***

Patrick Jheyd A Antonio (Batangas State University, Philippines)

Technology is invading every element of engineering. Collaboration of various engineering and technology techniques and disciplines can result in successful systems that can be used in everyday life and make living easier and simpler. Bio-Medical services have greatly improved as time and technology have progressed. For example, the Portable Diabetes Checking Machine has made life easier for many diabetes patients by allowing them to check their glucose levels without having to see a doctor. The existence of arthritis in the knee, which is produced by cartilage wear and tear, leading bones to rub against each other, producing pain and other problems, may be detected by an expert osteoarthritis system. The YOLOv3 model, a cutting-edge deep transfer learning machine vision approach, is used to develop a knee osteoarthritis diagnosis model. According to the findings of the study, the detection model has a mAP value of 96.58 % and a training accuracy of 98.73 % and a validation accuracy of 99.32 %, respectively

9:10 ***Identification of Parasitized Single Cell from Normal Using Deep Learning Approach***

Von Cedrick M. Calderon (Batangas State University, Philippines)

Patients' cells need to be examined, thus healthcare facilities require changes as well as advancements in terms of instruments and technology, notably software that aids in the diagnosis of certain symptoms and diseases by looking at them. This aids in the identification and diagnosis of intracellular parasites in a person's cell, making it easier to identify a person's health condition. These parasites are responsible for a variety of acute and chronic illnesses. The paper aim to provide enhanced model for cell classification. This will help to increase the accuracy of detection for intercellular parasites within the patient cell and easily diagnose a person health condition. In response to that, the system implements a deep learning technique in cell categorization using the YOLOv3 algorithm. Having a model with 90.6% mean Average precision, it made a cell classification with 99.06% precision determining whether the subjected single cell is parasitized or normal.

9:30 ***A COVID-19 Safety Monitoring System: Personal Protective Equipment (PPE) Detection using Deep Learning***

Mark Lester R. Collo (Batangas State University, Philippines)

With the recent breakout and rapid transmission of COVID-19, medical personal protective equipment (PPE) detection has gained prominence in the computer vision and deep learning domains. The need for people to wear face masks in public is growing. COVID-19 transmission can be considerably reduced with the use of face masks and PPE, according to research. The goal of this research is to construct a medical PPE detection system using deep learning. The goal of this study is to utilize the YOLOv3 object detection method to conduct object detection, detecting whether a health worker is wearing complete medical PPE or not, upon entering wards or environments prone to the virus. At the moment, there is no publicly accessible PPE dataset for object detection. Hence, the researcher aims to create a medical PPE dataset for future use and development. In the study's findings, the detection model got a mean average precision score of 96.59%, detected complete and incomplete PPE varied with accuracies ranging from 40% to 80% which is to be expected given that there is a lot of variations of medical PPE with different colors and types.

9:50 ***Detection of Covid-19 in CXR: A Low Sample Size Deep Convolutional Neural Network Training Data Approach***

Jehoshua P. Mulgada (Batangas State University, Philippines)

Infectious illness Covid-19 is highly contagious and has claimed the lives of numerous individuals. To assist prevent the virus's transmission, it's critical to identify and isolate those who have been infected with the infection. The purpose of the study is to aid in the detection of Covid-19 alongside with RT-PCR test by utilizing deep learning algorithm, specifically YOLOv3 as the technique to be use for it uses CNN, which then implements deep learning technique. The study has a promising detection to detect if the person's CXR has Covid-19, normal or viral pneumonia, obtaining a mAP value of 95.27% from model 17, which is the highest among the 12 models created.

PS2-5: PS2-5

Chair: Anvar Variskhanov (Mae Fah Luang, Thailand)

8:30 ***Segmentation and Contour Detection for handwritten mathematical expressions using OpenCV***

Sakshi Sakshi (Chitkara University Punjab, India); Vinay Kukreja (Chitkara University, Punjab, India)

Contour Detection owes its own significance in performing semantic segmentation and object classification. It is possible to recognise the edges of objects and readily locate them inside an image by employing contour detection. It is frequently the first step or achievable milestone in a varied range of interesting applications, such as extraction of foreground object from image, classical-image segmentation methodology, identification or detection of object and many more. In this study, we have endeavoured to perform contour detection using OpenCV Adaptive Threshold method on Aida handwriting math recognition dataset which contains 10 batches of 10K images. Our experimentation successfully segmented the inputted mathematical expressions with accuracy of 94.3% on the acquired dataset.

8:50 ***Automatic Classification of Questions based on Bloom's Taxonomy using Artificial Neural Network***

Mohamed Ifham (Sabaragamuwa University, Sri Lanka); Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Ashansa Wijeratne (Sabaragamuwa University of Sri Lanka, Sri Lanka)

Examination questions evaluation is critical in educational institutions because testing is one of the most prevalent techniques of evaluating students' success in a particular course. As a result, it is crucial to create a good and high-quality examination paper that caters to various cognitive levels. As a result, many instructors rely on Bloom's taxonomy proficiency level, a widely used framework for evaluating students' cognitive abilities and capabilities. According to Bloom's taxonomy, many efforts have been offered to tackle question classification automatically. The majority of existing works considered only one domain, such as computer science. This research aims to develop a classification model for classifying examination questions that fall into several domains using Bloom's taxonomy. This paper presents a method for automatically identifying questions using an Artificial Neural Network (ANN). Term Frequency - Inverse Document Frequency (TF-IDF) is used to derive the features from questions papers. We compared the ANN-based approach with Support Vector Machine based approach. According to the findings of this study, the proposed method got an accuracy of 85.2%, which is effective in classifying questions out of several domains using Bloom's taxonomy.

9:10 ***An Improved Procedure for Face Mask Detection using Convolution Neural Network***

Sudhanshu Kumar Jha (University of Allahabad, Prayagraj, INDIA & MHRD, Govt. of India, India); Mayank Saxena (University of Allahabad, India)

The present COVID-19 pandemic scenario where entire world is facing a lot of unforeseen medical challenges, can be somehow controlled by following some medical guidelines and procedures when monitored strictly. Wearing a specifically recommended face mask is one of the easiest ways to prevent it. However, due to negligence by the common people for avoiding face masks, need a meticulous system to find such people and appropriate action may be taken against them. Medical guidelines state that primarily COVID-19 and its variants outspread typically through nose discharge or droplets of saliva by the infected person's coughs or sneezes. Droplets of saliva all around us could infect us and others. So, People need to wear masks as it's one of the methods which can effectively depress the growth of its spreading. Identifying masks over the faces could be done using many methodologies in Computer Science. The primary concern is to work upon identifying masks on people's faces and increasing their recognition accuracy with simple methodology and network. Keep the fact in mind, this paper presents a methodology for the identification of masks on people's faces using Convolution Neural Networks (CNN), for this, a training dataset has been used to generate more augmented images. Afterward, it has been pre-processed by applying CNN. The method has been evaluated using a CNN-based algorithm on the test dataset. The simulation result shows satisfactory performance and accuracy through different curves.

9:30 ***Classification Method of Swallow Nest Quality Using Shape Features and Support Vector Machine***

Anindita Septiarini (Universitas Mulawarman, Indonesia); Ferda Maulana (Mulawarman University, Indonesia); Hamdani Hamdani (Universitas Mulawarman, Indonesia); Rizqi Saputra (Mulawarman University, Indonesia); Edy Winarno (Universitas Stikubank Semarang, Indonesia); Tenia Wahyuningrum (Institut Teknologi Telkom Purwokerto, Indonesia)

Swallow Nest is a valuable export commodity, particularly in Indonesia. It is produced when swallow's saliva hardens and is frequently encountered in high-rise buildings. Swallow nests can be utilized to treat various ailments in the medical sector. The price of a swallow nest varies according to its quality, which is commonly classified into three grades: quality 1 (Q1), quality 2 (Q2), and quality 3. (Q3). Q1 is of the highest quality, while Q3 is of the lowest. Each grade has a different physical appearance. Currently, many people lack knowledge regarding the grade of a swallow nest. Therefore, a method is needed to automatically classify the quality of swallow nests based on computer vision. The proposed method consists of several main processes, including image acquisition, ROI detection, pre-processing, segmentation, feature extraction, and classification. The features extraction was applied based on shapes, followed by implementing the Support Vector Machine (SVM) in the classification process. This process was performed with cross-validation using the k-fold values of 5. The performance evaluation was done

using three parameters: precision, recall, and accuracy, by achieving the value of 90.6%, 89.3%, and 89.3%, respectively.

9:50 ***A Hybrid SVC-CNN based Classification Model for Handwritten Mathematical Expressions(Numbers and Operators)***

Sakshi Sakshi (Chitkara University Punjab, India); Vinay Kukreja (Chitkara University, Punjab, India)

Machine learning and Computer Vision are computer science domains that have been working closely for a long time. Given the ubiquity of handwritten text in human transactions, we are endeavoring to acquire the answer to the quest "Can Computer Vision and Machine learning together be deployed effectively for decisive classification of handwritten mathematical numbers and operators?". The easier it is to communicate via handwritten texts and documents, the more challenging the task of digitizing and prediction, especially for the two-dimensional complex math statements and operators. This paper presents a hybrid model that involves machine learning and deep learning-based decision algorithms for classifying and predicting mathematical numbers and operators. The dataset considered for the experimentation has been downloaded from the Kaggle dataset store consisting of more than 12K images. The primary tasks involved include data collection, data preprocessing, and building and deploying the model. Mainly our model focuses on the extraction of contour features and performing classification using the LinearSVC model, and the prediction of numbers has been accomplished using CNN. The proposed classification and prediction model achieves an accuracy of 89.76% for predicting the math operators and 91.48% for predicting the numbers.

PS2-7: PS2-7

Chairs: Akm Muzahidul Islam (Madani Avenue, United City & United International University (UIU), Bangladesh), Donlaporn Suwanthep Suwanthep (Mae Fah Luang University, Thailand)

8:30 ***Amalgamated convolutional long term network (CLTN) model for Lemon Citrus Canker Disease Multi-classification***

Rishabh Sharma (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Lemon disease detection has been a hot topic of research for decades, thanks to the rising demand and supply for the commodity, which has increased the number of diseases found in the crop. Lemon citrus canker (LCC) is one of those diseases that has a draconian effect on lemon production, and to eliminate that factor, deep learning (DL) based convolutional long term network (CLTN) amalgamated model of convolutional neural networks (CNN) and long short term memory (LSTM) has been developed to build a system for detecting and classifying a 3000 image dataset of LCC disease based on four different disease levels. The implementation of the hybrid model resulted in a binary classification accuracy of 94.2%, while the best accuracy of 98.43% in the case of early level of LCC disease severity multi-classification. The proposed model is an effective model for image classification in terms of accuracy outcomes.

8:50 ***Coverage and Latency Analysis for NB-IoT in Uplink Transmission***

Rasveen Singh (G. D Goenka University Gurugram, India); Shilpy Agrawal (IILM College of Engineering and Technology, Greater Noida, India); Khyati Chopra (Jamia Hamdard University, India); Sandeep Kumar (KL University, India)

Internet of Things (IoT) is the 5th generation evolution, which significantly change the requirements for connectivity mainly regarding lower energy consumption, wide-area coverage, low device, and development cost, and support an enormous number of devices. For this, a novel technology named Narrowband internet of things (NB-IoT) is introduced by Third Generation Partnership Project (3GPP) in its release 13. The foremost requirement is to provide coverage extension specially to the devices placed inside deep doors and in remote areas, even in the worst channel condition. To achieve this in NB-IoT systems, repeating transmission data has been considered a promising coverage enhancement approach. In this paper, a uplink repetition dominated model is proposed for coverage extension with reduced latency rate. The conducted evaluation recovers the transmitted signal even in the poor radio condition, thereby providing coverage enhancement.

9:10 ***IoT Driven Solution for Indoor Air Quality Monitoring System to Develop a Smart Healthcare***

Environment: A Review Based Study

Nadia Shahrin Chandni and Mohammad Ismail (United International University (UIU), Bangladesh); Akm Muzahidul Islam (Madani Avenue, United City & United International University (UIU), Bangladesh)

Air pollution is always responsible for our health deterioration in many ways. In most cases, this health deterioration may cause severe illness to death. It is possible to reduce the effect of Air pollution only if we get the real-time solution. As we spend most of our time in the building or in an indoor space it would be smart to monitor the surrounding air and get a notification through message or alert using IoT-based devices while there will be the presence of air pollutants. This paper is based on the review of different journal and survey papers. It reviews the different systems which can provide an IoT solution for Indoor Air Quality Monitoring to develop a smart health care environment.

9:30 ***An empirical study of Facial Expression Recognition methods***

Marium Malik (The Superior College, Lahore, Pakistan); Maira Kamran (The Superior University, Pakistan); Muhammad Raza Naqvi (INP-ENIT, University of Toulouse, France)

Facial expressions play a crucial role in the non-verbal communication of human beings. It is effortless for them to recognize these sentiments naturally, without a delay but performing the same task through machines is quite challenging. Facial Expression Recognition (FER), a technique used to perform the latter, is a field that is being well researched due to its great impact on decision-making in medical, security, and corporate systems. In this paper, a high-level overview of the FER techniques, databases, results, and analysis is conducted in four-folds. First, we present the importance of its application in the industries. Second, the performance of the latest frameworks is analyzed. Third, the challenges faced in adaptability are described. Fourth, the gaps in the literature are addressed. This study provides a better understanding and updated information for future researchers who wish to explore this domain.

9:50 ***Usability Evaluation of Adaptive Features in Smart Phones: A statistical Analysis***

Hafiz Abdul Basit Muhammad (Superior University, Pakistan); Muhammad Waseem Iqbal (The Superior College, Lahore, Pakistan); Khalid Hamid (Superior University\, Pakistan); Muhammad Raza Naqvi (INP-ENIT, University of Toulouse, France); Muhammad Aqeel (Superior University, France); Farukh Muneem (Superior University, Pakistan)

Smartphone is a device performing the tasks of a computer system and cellular system combined having a touchscreen and user-friendly interface, I read different papers and discuss in detail internet access and an operating system typically for several downloaded apps to run at a high speed and efficiently, the paper that I will write in future has usability evaluation of different features of smartphones, This paper presents the usability in terms of versatility, efficiency and flexibility of smartphone features and its Analyses altogether. The smartphone usability features that are discussed in this paper include Screen rotation, the easy screen turn on/off, raise to awake, smart pause, Eye contact, smart alert, voice commands, face recognition, QR code Reader, Touch disable mode, Battery Saving mode, Night Mode and several Apps operating at real-time. The effectiveness of these features is measured through the After Scenario Questionnaire (ASQ) method. The experiment is carried out with the participation of 110 users of smartphones both Android (Google) and iPhone (Apple) users IoT.

Thursday, March 24 8:30 - 9:50 (Asia/Bangkok)

PS2-4: PS2-4

Chairs: Sudsiri Rungruang (Mae Fah Luang University, Thailand), Kusuma Tungpruan (Mae Fah Luang University, Thailand)

8:30 ***Neo-Twin Support Vector Machines for Pattern Classification***

Sambhav Jain (South Asian University, Delhi India); Shuvo Roy (South Asian University, Delhi India,

Bangladesh); Reshma Khemchandani (South Asian University, India)

In this paper, a new variant of Twin Support Vector Machines (TSVM) termed as Neo-Twin Support Vector Machines (Neo-TSVM) has been proposed for binary pattern classification. TSVM uses hinge loss to allow optimal separation from the opposite class, casting it as a constrained optimisation problem. Neo-TSVM presents a simpler model which eliminates the constraints and cast it as an Unconstrained Minimisation Problem (UMP). Further to allow, better separation between the non-parallel hyperplanes, the notion of angle has also been introduced in the optimisation problem. For testing the efficacy of the proposed classifier, experiments have been conducted on benchmark datasets, and it is observed that the proposed classifier achieves results comparable to that of TSVM, and is also time efficient.

8:50 ***Utilising Sampling Methods to Improve the Prediction on Customers' Buying Intention***

Chau-Tean Yap and Kok Chin Khor (Universiti Tunku Abdul Rahman, Malaysia)

One of the e-commerce challenges is online shopping systems' capability to predict the intention of customer purchasing, especially when building prediction models with unbalanced data sets. Data pre-processing methods, i.e., samplings, are commonly used to tackle the challenge for better prediction. We used a real-time online shopper purchasing intention data set from a published study in this project. The data set is unbalanced as it consists of only 15.5% of the Buy class and the remainder for the No-Buy class. In our experiments, six machine learning algorithms were applied and compared. They were K-Nearest Neighbour (KNN), Naïve Bayes (NB), C4.5, Support Vector Machine (SVM), Sequential Minimal Optimization (SMO) and Multilayer Perceptron (MLP). Generally, these classification algorithms cannot predict the customer intention well, especially for the minority Buy class. We used sampling methods to improve the classification results. The methods used were over-sampling, under-sampling and hybrid sampling, which modified the data set class distribution to achieve better results. Our results showed that the hybrid sampling method gave a comparable classification result and required less computational cost than the previously published study.

9:10 ***Consumer Decisions Under the Influence of social media & Behavioral Targeting***

Abhilash Gogulamudi (Symbiosis International University, India); Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

Previously, television and print ads were significant players in product promotion. However, in today's digital age, those old strategies are just one of several ways to promote any product. As technology has become an integral part of billions of people in everyday lives, the way consumers behave and make purchasing decisions is increasingly influenced and altered by social media and emerging marketing trends. This research aims to learn more about the Influence of consumer decisions by Behavioral Targeting and social media. In addition to discovering more about the impact of social media/the internet on consumer decision-making.

9:30 ***Disrupting the traditional marketing process and decision making using augmented and virtual reality***

Rajsee Sharma and Tripti Dhote (Symbiosis International (Deemed University), India)

In recent years, the world has experienced cut-throat competition in every industry, including marketing. Companies are employing advanced marketing innovations in order to become more accessible to current and future consumers and distinguish themselves from their rivals. The field of marketing has been catalysed by digital disruption. Experts believe that Extended Reality (XRs) which includes technologies like augmented reality (AR), virtual reality (VR) and mixed reality (MR) are promising technical resources for selling goods by offering virtual user interactions that mimic those encountered in physical usage. We will use qualitative methods in this research paper to examine how augmented reality and virtual reality are challenging the conventional marketing funnel, as well as observe the transformation of marketing strategies through the analysis of recent use cases.This research paper aims at assisting marketing managers in comprehending the recent change in conventional marketing strategies and how incorporating expanded realities into their campaigns will benefit them in achieving successful optimum marketing, improved product exposure, and increased revenue.

9:50 ***Modeling the Adoption of Hybrid Rice Seeds Brands among Farmers***

Deepika Jhamb (Chitkara University, Punjab, India); Vinayak Sharma and Amit Mittal (Chitkara Business School, Chitkara University, Punjab, India)

The Indian economy has a big dependency on agriculture, so agriculture has not only employment but also enabling support to a large population of the country. Rice is among the most important food crops of India thus it is very critical to the food security of the nation. Though hybrid rice was introduced in 1996 commercially to farmers of India, major acceptance of hybrid rice came in the last decade when the number of hybrid rice seeds was accepted by farmers for sowings. The state focused for the study is Jharkhand, where rice is a rainfed crop but this state has got good acceptance for hybrid rice seeds. In this study, we tried to understand the priorities of consideration of these factors while adopting a new hybrid rice seed brand by a farmer. The targeted geography of the study was the Ranchi district. We listed all possible factors impacting the adoption. The direct touchpoints individuals i.e., Dealer's point, Company representative and Government officials. The promotional advertisement, promotional campaigns, influencers or own user experience, and also credit, pricing were the other part of this list. After a detailed evaluation of each factor, we were able to bifurcate the factors into three representative categories "Advice", "Practical", and "Finance". In the study's results, it was found that "Advice" has emerged as a major factor while "Practical" was coming second big factor and "Finance" was the third important factor to influence adoption. Exploratory Factor Analysis followed by Confirmatory Factor Analysis was applied.

Thursday, March 24 8:30 - 10:10 (Asia/Bangkok)

PS2-3: PS2-3

Chairs: Vimal Kamleshkumar Bhatt (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, Pune, India), Kiki Khoifin (Mae Fah Luang University, Thailand)

8:30 ***Determinants of Vietnamese Farmers' Intention to Adopt Ecommerce Platforms for Fresh Produce Retail: An Integrated TOE-TAM Framework***

Hieu Duc Phan, Linh Hoang Vu, Chau Minh Ngoc Nguyen, Thang Duc Nguyen and Anh Quynh Trinh (National Economics University, Vietnam)

The application of e-commerce platforms for retailing agricultural products has been increasingly adopted for several benefits namely market expansion and connection, brand establishment, price improvement as well as the motivation for farmers to actively ameliorate their farming practices, product quality and package. However, this retail method is still lagging far behind in Vietnam - despite the need for digitalization to solve persistent problems, namely the imbalanced supply, demand and accompanied price loss in the traditional distribution channel. Thus, this research aims to investigate the factors that impact the Vietnamese farmers' intention to adopt e-commerce platforms for fresh produce retail. The paper applies the integrated Technology Acceptance Model and Technology-Organization-Environment framework. Through an online survey, a sample of 344 farmers who produced fruits and vegetables across Vietnam was drawn to confirm the hypotheses of this study. The results showed that three factors, namely "Perceived usefulness" (PU), "Perceived Ease of use" (PEOU) and the environmental context, directly and positively affect "Intention to Adopt" (INT). Besides, both the technological context and the organizational context is positively associated with PU and PEOU. Findings are valuable to the development in e-commerce platforms and policies to promote Vietnamese farmers' intention of using e-commerce platforms to retail agricultural products.

8:50 ***Attitudes of Society towards Breaking Beauty Standards Advertising***

Kanyarin Klinkosumsivadol, Thidarat Phubaengmai, Paveethida Taikul and Sunida Tiwong (Mae Fah Luang University, Thailand)

The purpose of this paper is to study the opinion of society towards breaking beauty standards. Recently, society has become aware about the diversity of the physical. Adidas promotes their product by using the theme of breaking beauty standards which shakes the world of advertising by using a model who does not follow the standard in their new advertisement. The literature review involves with breaking beauty standard, beauty standard, advertising, advertising effect, and self-confidence. The data obtained from the online questionnaire by collecting data from 408 respondents by using exploratory factor analysis (EFA). The questionnaire consisting of general information, Adidas brand, attitude of beauty standards, self-confidence, advertising, and giving an opinion. Most people agree that the beauty standard depends on individual attitudes and it lead to social issues such as discrimination, social bullying, etc. In addition, people are affected by beauty standard which lead to less of self-confidence.

Recently, people are more aware in diversity of beauty to persuade them to self-esteem in society. Moreover, bran ambassador and model in advertising impact people through beauty standard image. Adidas launched breaking beauty standards advertising, it made the brand more engaging because Adidas demonstrate the diversity of beauty. Nowadays, people in society have begun to be aware of various beauty and advertisements are part of making the breaking beauty standard movement more accepted in society.

9:10 ***Comparative Analysis of Top Payment Apps in India - By Studying Customer Satisfaction***

Pragya Tiwari (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vinayak Bhavsar (Balaji Institute of Modern Management, Sri Balaji University, India); Binod Sinha (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vimal Kamleshkumar Bhatt (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, Pune, India)

With the tremendous increase in the use of digital payment systems there is a surge in the usage of payment apps, therefore it is very important to do a comparative analysis of various payment apps in order to understand the customer satisfaction towards various payment apps and to identify the factors which motivates people to use a particular payment app. The Research is conducted Pan India using an online questionnaire of 200 respondents. Primary as well as secondary data was used in the study. Hypothesis testing was done using SPSS software and results were obtained based on all the factors which could possibly affect the selection of the payment app.

9:30 ***Impact of Stock Trading Apps on Indian Millennial Consumer behavior in the stock market***

Chinmay Sumant (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vinayak Bhavsar (Balaji Institute of Modern Management, Sri Balaji University, India); Binod Sinha (Balaji Institute of Modern Management, Sri Balaji University, Pune, India); Vimal Kamleshkumar Bhatt (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, Pune, India)

The present study is conducted on the 'stock trading' business and how consumers decide to buy and sell in the digital era. Currently, there are many apps available on smartphones such as 'kite' by Zerodha, Angel Broking Stock Trading App, 'MO investor' by Motilal Oswal, 'IIFL Markets' by IIFL securities, and many others which have more than 10 lakhs of downloads on the Google Playstore. Lakhs of Indians, mostly millennials between the ages of 20 and 35, trade daily through these. Before, the rise of these apps in the mid-2010s, people used to rely on their stockbrokers to put 'an' order to sell or buy any share of a company. Information sources were just television and newspaper - and most people used to act on the advice of stockbrokers or their trusted acquaintances. Now, the scenario is completely different - stock trading individuals are continuously updated through their 'Trading apps' (such as Kite and others mentioned above) or are advised by gurus through social media apps like Instagram or LinkedIn or YouTube, etc. There are even Stocking Trading Advisory apps such as 'Upstox', 'Smallcase' etc., which advise consumers on purchase, sell, and hold decisions. This paper will focus on the impact of stock trading apps on the Indian Millennial (20 to 35 years) consumer behavior in the stock market.

This study will also focus on identifying the 'main parameters of value' considered by the customers when deciding to engage in online trading through stock trading apps. This study will further undertake a competitive analysis of the discovered 'main parameters of value' in the most used apps, limiting to Zerodha, Angel Broking, Motilal Oswal, and IIFL securities, etc., which are having higher than 10 lakhs downloads in google playstore. This study will conclude by identifying which app amongst these is most ahead in its journey to becoming an ideal product at this time.

9:50 ***Implementation of digital marketing strategy in the Gaming industry***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Dixant Singh (Symbiosis International(Deemed University) & Symbiosis Institute of Digital and Telecom Management (SIDTM), India)

Digital Marketing is a power tool that can either break or make anything it touches. Due to the current pandemic scenario, we all have learned that Digitalisation is the new normal and adopting this new normal, digital marketing is "The Only Tool" for any

marketer. Digital Marketing has not only changed the way how people viewed the gaming industry but has also opened new horizons for various kinds of career opportunities. Gaming industry is one of the most misunderstood and ignored industry of our modern world. Many people believe that gaming is just for lazy people who don't have anything better to do. But what most of them don't see is that Gaming industry is the biggest entertainment industry and even all other entertainment industry combined, can't match the annual revenue of gaming industry. I grew up playing video games and has seen this industry grow and change with time. My interest in gaming and newly developed passion for marketing, urged me to dive deeper into the world of digital marketing and how with evolution in technology and digital marketing strategies has impacted the gaming industry and brought it into the eyes of billions of people all around the globe.

PS2-8: PS2-8

Chair: Proychai Klakayan (Mae Fah Luang University, Thailand)

8:30 ***Ensure Safe Internet for Children and Teenagers Using Deep Learning***

Farzana Arefin Nazira (Bangladesh University of Business & Technology, Bangladesh); Sudipto Ghosh (BUBT, Bangladesh); Kamruddin Nur (Universitat Pompeu Fabra, Spain); Sondip Poul Singh and M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

Modern technology provides us with incredible resources that change how we live our lives daily. In today's world, every single person uses a mobile phone. The child and teenagers also use mobile phones with the internet to communicate with their parents when they are in the office. Children and teenagers also use mobile phones for study, gaming, and social media. Sometimes the inappropriate content will appear before children and teenagers. Sometimes they cannot understand and click on it. We developed a proposed architecture based on CNN, RNN, OpenCV, haar cascade classifier, and MySQL for internet safety children and teenagers. When children and teenagers click on inappropriate content, the video camera will open and detect a child, teenager, adult, or old. If it is a child or teenager, the content will be hidden. OpenCV has been used for opening the video camera. Haar cascade classifier used for face detection. XAMPP MySQL database has been used for matching website links and blocking them. We generate a child, teenager, adult, and old(CTAO) dataset that contains 5000 images. The proposed architecture has been assessed using the CTAO dataset. We obtained 88.50% accuracy, 86.12% precision, 87.10% recall, and 86.60% f1 score.

8:50 ***Improving Stochastic and Dynamic Communication Networks by Optimizing Throughput***

Md Mashum Billal (University of Alberta, Canada); Mohammad Arani (University of Arkansas at Little Rock, USA); Mohsen Momenitabar (North Dakota State University, USA); Hamzeh Davarikia (McNeese State University, USA)

The research problem is to measure performance of a communication network by constructing models for the expected value. We tried to propose a comprehensive stochastic-network model whose nodes and arcs are subject to failure, we can monitor existing network performance and also forecast the performance of new or improved networks. For the purpose of this paper dynamic network flow models with a stochastic network representation of a communication network is used. The approach is to use these performance measure models to produce bounds for the expected values of the vector time-series performance data that can be possibly output of network monitoring.

9:10 ***Experimental Analysis of Classification for Different Internet of Things (IoT) Network Attacks Using Machine Learning And Deep learning***

Anika Tasnim, Nigah Hossain, Nazia Parvin, Sabrina Tabassum, Rafeed Rahman and Muhammad Iqbal Hossain (Brac University, Bangladesh)

The internet of things (IoT) is one of today's most adaptable technologies. The internet of things (IoT) is adaptive and versatile due to its pervasiveness, rising network connection capacity, and diversity of linked objects. The most common problem impeding IoT growth is insufficient security measures. The threat of data breaches is always there since smart gadgets gather and transmit sensitive information that, if disclosed, might have severe consequences. In this article, to identify and classify IoT network

attacks, we have analyzed six machine learning and deep learning approaches: Decision Tree, Random Forest, AdaBoost, XGBoost, ANN and MLP. Accuracy, Precision, Recall, F1-Score, Confusion Matrix are some of the metrics we have used to evaluate our models. We have achieved fairly impressive results (above 96%) in binary classification for all the techniques. When all of the classifiers were analyzed, Decision Tree and Random Forest outperformed all others (above 99%) for both binary and multiclass classification. Adaboost and ANN, on the other hand, perform badly for multiclass classification. We have also applied Undersampling, Oversampling and SMOTE techniques on a dataset to reduce data skewness and to evaluate multiple ML and DL algorithms. The feasibility of the techniques suggested in this work is demonstrated on the IoT/IIoT dataset of ToN IoT datasets, which incorporate data obtained from Telemetry datasets of IoT and IIoT sensors.

9:30 ***Deep Neural Network for Recognition of Enlarged Mathematical Corpus***

Sakshi Sakshi (Chitkara University Punjab, India); Sachin Lodhi (UIT(BU) Bhopal, India); Vinay Kukreja (Chitkara University, Punjab, India)

Recent works influenced by the robust and outstanding performance of deep learning-based recognition models show the less attended research on an enlarged corpus of handwritten mathematical text. This article focuses on proposing a deep neural network-based model that has been processed and trained for a real-time dataset of mathematical expressions collected from school and university students of Punjab and Madhya Pradesh states of India. Mathematical expressions are part of education and knowledge-based science learning. Thus, predicting them on their handwritten source using a neural network is the novel approach of the article. A total of 236057 images have been obtained after segmentation, and the sample data has been collected from 1000 users. The proposed deep neural model exclusive of three dense layers (TrioNet) gives us an accuracy of 99.1% while working with 20 epochs.

PS2-9: PS2-9

Chair: Supannika Khuanmuang (Mae Fah Luang University & School of Management, Thailand)

8:30 ***A Bibliometric Analysis of Blockchain and its Applications in IOT and ML for Improved Decision Making***

Manisha Bunga (Symbiosis Institute of Digital and Telecom Management, India); Sujata Joshi (Professor, SIDTM, India)

The fundamental goal of this research is to examine the evolution of Blockchain technology, particularly in the areas of IoT and machine learning. Decision-making has become more complex in the modern era as there are more options to pick from. This research explains how blockchain is used in the decision-making process. Blockchain stores the data where it is highly impossible to hack or edit this data. The research methodology used is Bibliometric Analysis. Bibliometric analysis is the analysis of books, articles, and other publications using statistical methods. There were a total of 18,978 publications available in Scopus from 2012 to 2021 on Blockchain. There were a total of 18,994 publications on Blockchain overall. Country-wise, year-wise, topic-wise, journal-wise, institution-wise and research field-wise analysis is done in this study. By the obtained data, the performance of Blockchain will be analyzed and the future of Blockchain can be predicted. According to the study, Blockchain has a wide range of applications in IoT and ML, all of which improve decision-making. This analysis provides valuable insights and adds benefit for researchers to understand the overall development of Blockchain.

8:50 ***Influence of Consumer Decisions by Recommender system in fashion e-commerce website***

Sruthi K and Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

Purpose - The Study aims at providing deeper insights on influence of recommender systems and various personalized suggestions in Fashion e-commerce websites. It gives information regarding how recommender systems impact the purchasing decision of a consumer to formulate better systems with data.

9:10 ***Comprehensive Survey of different Machine Learning Algorithms used for Software Defect Prediction***

Sharadhi A k (India); Vybhavi Gururaj (Bachelor Degree, India); Sahana Shankar (Ramaiah University of Applied Science, India); Deepak Varadam (Assistant Professor & M S Ramaiah University of Applied Sciences, India); Keerti Umadi and Mushkan Kumar (Bachelor Degree, India)

The software development life cycle is a long and complicated process. It consists of analysis, design, development, testing and deployment. Defect prediction is the technique of creating models that detect defective systems such as units or classes in the early stages of the process. The major goal of Software Defect Prediction is to detect defects prone in the program and thereby reduce the effort, time and cost involved to the minimum. This paper gives a comprehensive review of all the techniques to approach defect prediction. The PROMISE repository which is a public software defect prediction dataset which is owned by the National Aeronautics and Space Administration (NASA) is used. More than 30 research papers in the domain of software defect prediction were analysed and reviewed. In each paper surveyed, the processes involved in Software Defect prediction were captured. About 30 papers with different Machine Learning Algorithms were identified and entered into the table. The results were tabulated into columns like Dataset Used, Supervised Learning Algorithm, Un-supervised Learning Algorithm and Computational Intelligence. The bar graphs were generated to determine the most used Supervised Learning Algorithm, Un-supervised Learning Algorithm and Dataset used for Software Defect Prediction among all the 40 papers surveyed thoroughly.

9:30 ***Deep Learning Based Optimal Joining Order Enumeration with Adaptive Cardinality Estimation***

Sabbir Ahmed Sibli, Nuray Jannat and Asma Ul Hussna (BRAC University, Bangladesh); Iffat Trisha (BRAC University, Dhaka, Bangladesh); A. M. Esfar-E-Alam (BRAC University, Bangladesh)

Query optimization is one of the trendiest fields of research in database study since the performance of query execution is largely determined by how the query is optimized. Query Optimization's purpose is to find the optimal physical plan for a given cost model. Among all query optimization problems, join query optimization is the most complex one. In reality, it belongs to the NP-hard complexity issues. Moreover, the performance of identifying joining relations is heavily reliant on cardinality estimation. If the cardinality estimation fails to provide the actual cost of any joining order, no matter how efficient the method is, it will fail. As a result, both the approach for determining the best joining order and the method for estimating cardinality are equally significant. This study combines these two concepts: the first is ReJOIN, a deep reinforcement-based joining order enumeration technique, and the second is machine learning-based adaptive cardinality estimation in each run of the DRL. In this paper, it is demonstrated how much of an impact is dosed when PostgreSQL is used in conjunction with the proposed technique. In addition, the full suggested model has been performed and evaluated using an open-source dataset of the Internet Movie Database (IMDB). A comparison has been done between REJOIN, joining order enumeration with traditional cardinality estimator, and with ML-based cardinality estimator. Between these two ways of query optimization, the second one performs better and execution time has been improved from 2% to 27% approximately.

9:50 ***Blockchain and IoT in developing Fintech Ecosystem- An Assistance to Insurance Industry***

Rajarshi Chauhan (Symbiosis Institute of Digital and Telecom Management, India); Abhijit V. Chirputkar (Symbiosis International Deemed University, India); Pankaj Pathak (Symbiosis International University & Symbiosis Institute of Digital and Telecom Management, India)

With the advent of newer risks, challenges, and ever-changing consumer behavior Blockchain and IoT can help shape the future of the Insurance Industry. The Covid Pandemic has coerced the insurers to determine how best to meet the demands of their customers, provide service with minimal effort, and achieve their cost efficiency objective. The cost-efficiency objective of the insurance industry should also be aimed at freeing up funds to invest in new technologies and not lose sight of the transformation imperative. Blockchain and IoT can provide the industry with an opportunity to transform its core functions and processes. This study aims to highlight the role of IoT and blockchain in assisting for decision making in the Insurance industry, as well as research trends. In addition, the study attempts to identify potential opportunities in the insurance business. The goal of this review article is to analyze both the literature sources to comprehend the actual levels of implementation and use cases, as well as to determine the direction in which the insurance industry is now heading in terms of technological adoption.

Thursday, March 24 10:10 - 10:20 (Asia/Bangkok)

Break: Coffee Break

Thursday, March 24 10:20 - 12:00 (Asia/Bangkok)

PS3-1: PS3-1

Chair: Nuttachat Wisittipanit (Mae Fah Luang University, Thailand)

10:20 ***Acute Decisive Fuzzy Haptic Surface Response System for Tactile Sensitivity***

Shriram K. (VIT-AP University, India); M. Kalyan Chakravarthi (VITAP, India); Y. V. Pavan Kumar (Vellore Institute of Technology - Andhra Pradesh (VIT-AP) University, India); Bharath Kumar V. (VIT-AP University, India); D. John Pradeep and Ch Pradeep Reddy (Vellore Institute of Technology - Andhra Pradesh (VIT-AP) University, India)

Virtual Reality (VR) environment has been gaining significance and it is now possible for one to touch the virtual objects and also transform them with hands. But it requires much more than a fast graphic board and an immersive visual display to realize the VR. For tasks like multiple-finger interaction, it requires a force-feedback device which generally is acquired from a wearable 'haptic glove'. The recent progress in the VR market has resulted in the sophistication of efforts in this technology. Already existing haptic gloves provide only generic haptic feedback to the user, thus, the user cannot differentiate the texture of the objects that he/she is interacting within the virtual environment. To overcome this drawback, the proposed system uses machine learning complemented with a fuzzy logic system to provide distinctive haptic feedback based on the object textures such as coarse, smooth, etc., movement of the user's hand and its speed. This system is designed to be used as an add-on with the existing VR Gloves so that user's hand movement tracking data collected by the existing system can be reused by the proposed system. This eliminates the need for additional Inertial measurement sensors, thereby reducing the costs of the overall project. This paper presents a new system that enhances the haptic feedback system by using a differential mechanism based on the texture of the object that can be rendered in VR. This application paves a path for advanced decision-making assistance in haptic surgeries in modern medicine.

10:40 ***Alzheimer's disease detection with Optimal EEG channel selection using Wavelet Transform***

Digambar Puri (Ramrao Adik Institute of Technology, India)

Alzheimer's disease (AD) is a neuro degenerative disorder having higher fatality in the elderly due to delayed treatment caused by a lower detection rate. State-of-the-art multichannel Electroencephalogram (EEG) techniques have been reported to assist clinical practitioners in early AD detection. However, a large number of EEG channels comprises several redundant channels resulting in higher computational complexity. Paper presents a channel ranking using sub-band-based energy to entropy ratio for automatic detection of AD. Wavelet packet analysis is used to calculate the ratio of energy to entropy for each wavelet sub-band of the EEG signal. The signal channels are ranked based on calculated sub-band ratio values such that the most important channel has the highest ratio. The feature vector for a channel comprises the mean, standard deviation, kurtosis, minimum value, maximum value, and energy of each wavelet packet sub-band. The optimal number of channels is selected using proposed rank-based sequential backward feature elimination. Six different classifiers, namely, support vector machine (SVM), multi-layer perceptron neural network, k-nearest neighbors, random forest, Naive Bayes, and AdaBoost are used in a 10-fold cross-validation framework. Evaluation is performed using 16 channel Alzheimer's Patients' Relatives Association of Valladolid dataset. The experimental results showed the highest accuracy of 97.50%, with 97.08% sensitivity and 97.45% specificity for six channels (T4, P3, P4, O1, O2, and Cz) and SVM classifier.

11:00 ***An Intelligent Voice Assistance System for Visually Impaired using Deep Learning***

Renju Varghese (Providence College of Engineering Chengannur, India); Pramod Mathew Jacob (Providence College of Engineering Chengannur & Chengannur, India); Midhun Shaji, Abhijith R, Emil John and Sebin Philip (Providence College of Engineering Chengannur, India)

Unassisted navigation, object recognition, obstacle avoidance, and reading activities are extremely difficult for people who are completely blind. For those who are visually impaired, we present a new form of assistive technology. Raspberry Pi 3 Model B+ was selected to illustrate the proposed prototype's capability because of its inexpensive price, compact size, and ease of integration. Incorporated within the design is a camera, sensors for obstacle avoidance, and powerful image processing algorithms for detecting and classifying objects. Both the camera and the ultrasonic sensors are used to determine the user's distance from the impediment. The image-to-text converter, followed by audio feedback, is integrated into the system. A typical pair of eyeglasses can be used to mount the entire system, which is small, light, and simple to use. Using 60 completely blind people, researchers compare the suggested device to the classic white cane in terms of performance. Controlled environments based on real-world scenarios are used to conduct the evaluations. In comparison to a white cane, the proposed device provides higher accessibility and comfort, as well as simplicity of navigation for visually impaired people

11:20 ***An interactive and secure Blockchain web portal for online healthcare services***

Sonali Kothari (Symbiosis International Deemed University, India); Vijayshri Nitin Khedkar (Symbiosis Institute of Technology, Symbiosis International, Lavale, Pune, India); Aditi Goyal, Aditya Banerjee, Aniket Mulik and Yashika Chhabaria (Symbiosis Institute of Technology, India)

In a world where privacy and authenticity gets questioned at every turn, technologies like Blockchain exist to help assist the digital information's integrity to remain. A volatile and sensitive industry, the healthcare industry, is seen as an avenue for multiple technological ideas and advancements. With privacy being the main concern, work talks about the importance of its resolution, putting users and their needs first through user research, and further implementing a secure and effective Blockchain file storage system using IPFS and Ethereum, accessed via an interactive web application and using a secure backend for user information integrity within system.

11:40 ***FSALE: Fast Decision-Aiding Tool in the Investigation of Salmonella Enterica Genome Assemblies***

Nuttachat Wisittipanit, Ekachai Chukeatirote and Adirek Baisukhan (Mae Fah Luang University, Thailand)

Outbreak events involving foodborne pathogens such as Salmonella enterica happen more frequently nowadays; and when such events occur either in the endemic or pandemic level, they must be dealt with swiftly and effectively to prevent further spread. As such, this research presents a bioinformatics tool based on whole genome sequence (WGS) data called "FSALE" which can rapidly analyze a group of genome assemblies in a short period of time and provide information for healthcare professionals, crucial in the decision making process to deal with an outbreak event in a timely manner. The reported outputs include serotypes, sequence types (STs), core-genome multi-locus sequence typing (cgMLSTs), antimicrobial resistance (AMR) classes and subclasses (for antibiotic treatments) as well as pie chart and phylogenetic tree for the infection source investigation. Given the low-cost, fast processing time and super high resolution of WGS, FSALE could be a viable tool for rapid and deep epidemiological investigation for any medical experts who have to deal with the occurrence of Salmonella enterica outbreaks.

Thursday, March 24 10:20 - 11:40 (Asia/Bangkok)

PS3-2: PS3-2

Chair: Surapong Uttama (Mae Fah Luang University, Thailand)

10:20 ***A Comparative Study of Machine Learning Models for Parkinson's Disease Detection***

Chayut Bunterngchit (Institute of Automation, Chinese Academy of Sciences, China); Yuthachai Bunterngchit (Siam University, Thailand)

Parkinson's disease is a major public health concern, affecting over 6 million people worldwide. The objective of this paper is to assist doctors and clinicians in accurately detecting the disease at an early stage. Previous research proposed various models

that gave very high accuracy. However, very few of them examined the processing time of each model, which is an important consideration in decision making. The most common method for diagnosing this disease is through voice signal recordings. This paper formulates 10 machine learning-based predictive models on a biomedical voice measurement dataset. A genetic algorithm is applied as a feature selection algorithm. The highest prediction accuracy after running 10 generations is 97.96%. The features of the most accurate model are reduced from 22 to 9 features. The processing time of the most accurate model is 1.83 seconds. The best improvement in accuracy after applying this feature selection algorithm is 16.33%.

10:40 ***A review of Generative Adversarial Networks in Cervical Cancer Imaging***

Tamanna Sood, Padmavati K and Rajesh Bhatia (Punjab Engineering College, India)

Cervical cancer is the fourth most common type of cancer found in females. It contributes 6-29% of all cancers in women. It is caused by a virus known as Human Papilloma Virus (HPV). The 5-year survival rate of cervical cancer varies from 17%-92% depending upon the stage at which it is detected. Early detection of this disease helps in better treatment and survival rate of the patient. Many deep learning algorithms are being used for the detection of cervical cancer these days. A special category of deep learning techniques known as Generative Adversarial Networks (GANs) are catching up speed in the screening, detection, and classification of cervical cancer. In this work, we present a comprehensive survey of the various GAN models, their applications, and the evaluation metrics used for their performance evaluation in the field of cervical cancer imaging.

11:00 ***Multi class Alzheimer disease detection using deep learning techniques***

Ch S C A Rama Ganesh, Gunthalagari Sri Nithin, Shekkari Akshay and Venkat Narayana Rao (Sreenidhi Institute of Science and Technology, India)

Alzheimer's disease is a neurodegenerative disorder. Alzheimer's Disease is a predominant kind of memory disorder. Alzheimer's disease is not reversible, progressive brain disease shows a decrease in thinking with no validated disease-modifying treatment, which implies that there is no cure. The disease's side effects are harmless in the beginning, but later they become more extreme over the long run. Thus, a great effort is needed to develop methods for detecting early, especially at stages like very mild, mild, moderate, etc.… to slow or prevent disease progression because, on the off chance that the sickness is anticipated before, the cell degeneration can be slowed down. To this end, the construction of a good prediction system for Alzheimer's disease is the aim of this paper, often reducing time to treatment, medical errors, and overall healthcare cost. This paper utilizes AI calculations to anticipate Alzheimer's illness utilizing Brain MRI Scans. In our study, we trained CNN models in terms of detecting from brain MRI images. The MRI image dataset has been collected from The OASIS dataset. Three different Deep CNN models for our study: VGG - 16, Inception-V3, and Xception to classify Alzheimer's disease. We trained and evaluated all the Deep CNN models and after a relatively short amount of training (125 epochs), we got to achieve a 75% accuracy with the VGG-16 model, 70% accuracy with the Inception-V3 model, and 70% with the Xception model. Thus, we got very high classification accuracy with our research. In this paper Categorizing of Alzheimer's disorder is done into multiple classes (no-dementia, very mild, mild, moderate) to enable the patient to undergo the best and most efficient treatment plan to the patient right away.

11:20 ***Identification of chemical entities from prescribed drugs for ovarian cancer by text mining of medical records***

Sonali Kothari (Symbiosis International Deemed University, India); Vijayshri Nitin Khedkar (Symbiosis Institute of Technology, Symbiosis International, Lavale, Pune, India); Anvita Gupta, Adhiraj Goswami, Muskaan Agrawal and Kajal Jaggi (Symbiosis Institute of Technology, India)

With the emerging technologies and latest trends in the information technology sector, machine learning can be said as one of the most powerful means in developing various software which are helping the business as well as the industries, the government, and private organizations, which shows the change in the emergence of this technology in the healthcare sector. Healthcare can be said as the most important aspect of the 21st century. With the spread of various diseases and also the pandemic which had hit the world recently the healthcare system must come up with efficient drugs which are liable and are for a sure cure to the disease. Proposed research involves use of various machine learning tools and deep learning techniques. The algorithm uses text mining and NLP for extraction of chemical data from the related research papers and a drug dictionary is created. This dictionary contains specified targeted chemical data related drugs used for treating ovarian cancer and will help in suggesting personalized drug to patient.

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PS3-3: PS3-3

Chair: Rajanikanth Aluvalu (Chaitanya Bharathi Institute of Technology, India & Noble International University, USA)

10:20 ***Spurious Cotton Seed Control Management***

Nishant Racherla, Bhavesh Kankani and Adarsh Reddy Pulakanti (India); Venkat Narayana Rao (SNIST, India); Pallepati Vasavi (Annamalai University, India)

There have been several news stories in the last couple of years about police seizing fake cotton seeds. Because no effective steps or activities have been done to address this issue, it has gotten worse. The customers who buy the seeds and the authentic producers who generate the seeds gain equally from the use of the technology. Customers may scan the QR code on the package to ensure that the goods they are purchasing are from a trusted manufacturer. Genuine cotton seed package makers have suffered huge losses as a result of the surge of counterfeit cotton seed packages. Genuine producers will be able to receive their fair portion of the money as a consequence of the suggested system, which would result in the eradication of phony goods. As previously stated, no meaningful steps have been done against this, other than the arrest of those responsible for this heinous act. However, they are just measures implemented after the event. The system proposed is intended to be a preventative measure.

10:40 ***An Improved Mobility State Detection Mechanism for Femtocells in LTE Networks***

Umar Danjuma Maiwada (Universiti Teknologi PETRONAS (UTP), Malaysia & Umaru Musa Yaradua University, Nigeria)

The usage of femtocells, or micro macrocell base stations, increases the quality of service for both indoor and outdoor customers. Femtocells were used in 4GP's (Fourth Generation Project) LTE (Long Term Evolution) and LTE-advanced like the 5G/6G networks to improve indoor coverage and capacity. However, the random deployment of femtocells, as well as the large number and size variables, make controlling mobility even more difficult. This research investigates femtocell mobility state detection algorithms for LTE and LTE-advanced networks (5G/6G networks). Several systems for detecting movement are currently in place. However, when it comes to cell type information and parameter scaling difficulties, they are found wanting. Overall handover performance suffers because of this gap that present techniques fail to address. As a remedy, this study presents an Improved Mobility State Detection Mechanism (IMSDM). As a result of the findings, IMSD appears to be a viable way to improve handover performance deterioration and information about the cell type problems. Although it did not reduce the risk of Radio Link Failure (RLF), it did provide a good trade-off between RLF risk and the frequency of Ping-Pong handovers.

11:00 ***An Integrated Number Plate Recognition System through images using Threshold-based methods and KNN***

V Uma Maheswari (Vardhaman College of Engineering, India); Rajanikanth Aluvalu (Chaitanya Bharathi Institute of Technology(A)); Mudrakola Swapna (Matrusri Engineering College)

In the last few decades, the use of vehicles in our daily life has become mandatory and increased drastically. Sometimes, controlling traffic and identifying vehicle owners manually becomes tedious due to crowd signals, which disobey the traffic rules and drive fast and abnormal. This demands efficient automatic number plate detection as the solution these days. Still, it is challenging in such cases as moving vehicles fast, font, illumination, etc. This led to developing efficient and automatic number plate detection as the solution. This paper presents an automatic number plate detection with number diagnosis and tracking by applying various methods such as thresholding, morphological methods, contour detection, etc. Later, KNN is used for classification to improve accuracy. The proposed method tested on datasets DB1 and DB2 proves better in terms of accuracy, recognition rate, and retrieval rate.

11:20 ***Improved Point 5P Formula for Twisted Edwards Curve in Projective Coordinate Over Prime Field***

Zuren Razali (Faculty of Communication, Visual Art and Computing, Universiti Selangor, Malaysia);

Norliana Muslim (Universiti Selangor, Malaysia); Saliyah Kahar (Institute of Visual Informatics, Universiti Kebangsaan Malaysia, Malaysia); Faridah Yunos (Universiti Putra Malaysia, Malaysia); Kamsiah Mohamed (Universiti Teknologi MARA & Universiti Selangor, Malaysia)

Computer security is essential in today's world of technological advancement. Providing high security for constrained devices with limited capacity, memory, and power consumption has become one of the prominent challenges in computer security. Elliptic curve cryptography (ECC) is a powerful cryptography approach that generates security keys using the mathematics of elliptic curve (EC) to achieve an equivalent level of security with smaller key sizes. The efficiency of ECC depends on an EC operation known as scalar multiplication (SM). SM in Affine coordinate that has an inversion can be accelerated by employing projective coordinates. At the point arithmetic level, this paper improved the precomputed point by proposing a new point 5P formula in projective coordinates using EN for the Twisted Edwards curve over prime field. By comparison to the Twisted Edwards curve with temporary variables method, the algorithm using the proposed 5P formula saved 3M with 16.3% cost reduction. The proposed method also saved 3.2M, 7.2M, and 4.2M with 17.2%, 31.9% and 21.4% cost reduction, when compared to 5P using the Weierstrass curve with point addition, Edwards curve with points addition and doubling, and Edwards curve with computable and point addition methods respectively. The proposed point 5P can be applied to improve the ECC of SM algorithm.

11:40 ***Server Load Balancing with Round Robin Technique in SDN***

Tilokchan Irengbam, Thounaojam Rupachandra Singh and Tejmani Sinam (Manipur University, India)

Round Robin Algorithm plays a crucial role in load balancing of server farms. This paper's primary focus is to benchmark the Round Robin algorithm in Server Load Balancing (SLB) using Software Defined Networking (SDN). Experimental results show that the Round Robin algorithm gives 100% availability of the servers. Load balancing is done among the live servers from the server pool. In our experiment, the Round Robin load-balancing algorithm is implemented using a POX controller and an OpenFlow switch.

Thursday, March 24 10:20 - 11:40 (Asia/Bangkok)

PS3-4: PS3-4

Chair: Shiv Prakash (University of Allahabad, India)

10:20 ***A Gas Cylinder Monitoring System: A Benign Transportation Sector Based on IoT and Edge Computing***

Mahbubul Islam, Saddam Amin, Abul Kalam Azad and Gazi Mainuddin (United International University (UIU), Bangladesh); Akm Muzahidul Islam (Madani Avenue, United City & United International University (UIU), Bangladesh)

Hydrocarbon (HC) based Compressed Natural Gas (CNG) gas is highly flammable and can be threatening if not maintained and monitored correctly. Failure to detect gas leakage leads to property damage and poses a severe threat to human life. In this paper, we focused on the safety measures of CNGbased automobiles in Bangladesh's transportation sector. CNGrun vehicles are causing a high risk of explosion, and if not regulated and monitored regularly, the gas cylinder can explode, causing massive damages. Also, the manual inspection may not always be precise and often produce severe consequences. Therefore, we have proposed an IoT and Edge computing-based system to supervise any leakage and the cylinder's comprehensive monitoring. In our system, IoT-enabled sensors continuously collect data, and if there is a sense of risk detected in the CNG cylinder, the system can send a necessary alert to the authorized person.

10:40 ***E-Mail Assistant - Automation of E-Mail Handling and Management using Robotic Process Automation***

Arpit Khare, Sudhakar Singh, Richa Mishra and Shiv Prakash (University of Allahabad, India); Pratibha Dixit (King George's Medical University, India)

In this paper, a workflow for designing a bot using Robotic Process Automation (RPA), associated with Artificial Intelligence (AI) that is used for information extraction, classification, etc., is proposed. It would ease the effort of an individual or organization required for handling email communication. The bot is equipped with the many features that make email handling a stress-free job. It automatically login into the mailbox through secured channels, distinguishes between the useful and not useful emails, classifies the emails into different labels, downloads the attached files, creates different directories, and stores the downloaded files into relevant directories. It moves the not useful emails into the trash. Further, the bot can also be trained to rename the attached files with the names of the sender/applicant in case of a job application for the sake of convenience. The bot is designed and tested using the UiPath tool to improve the performance of the system. The paper also discusses the further possible functionalities that can be added on to the bot.

11:00 ***Impact of Abstract Factory and Decorator Design Patterns on Software Maintainability: Empirical Evaluation using CK Metrics***

Aisha Kurmangali (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Wan Nurhayati Wan Ab Rahman (Universiti Putra Malaysia, Malaysia)

Gang of Four (GoF) design patterns are the famous set of twenty-three reusable and robust solutions to certain established problems in object-oriented programming that still guides software developers and designers despite having been published in mid-90's. However, it is relatively difficult to explicitly determine the overall appropriateness and suitability of a design pattern in a software system. Thus, this work attempts to select one attribute from the McCall's software quality model - maintainability and empirically evaluate it before and after applying selected design patterns (Abstract Factory and Decorator) within a relatively simple problem scenario to keep the focus on and prove the positive effect of design patterns in object-oriented software solutions in terms of their maintainability.

11:20 ***Plant Disease Identification from Leaf Images using Deep CNN's EfficientNet***

Md. Mohsin Kabir, Akibur Rahman Prodeep, Asm Hoque and Md. Saifur Rahman (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

Detecting plant sickness is urgent according to the viewpoint of agribusiness, as illnesses frequently limit plants' creation limit and will be helpful for phytopathologist. Notwithstanding, it is challenging, regularly worldly, and tedious to perceive plant sicknesses with manual methodologies. All things considered, the more significant part of the proposed models can analyze the diseases of a particular plant. Despite relying on multi-class grouping, the model employs a multilabel layout strategy to identify both the plant and the type of disease. For the examination and evaluation, we have made our own data set from different online sources that included leaf pictures of ten plants. In our analysis, we compared various famous convolutional neural network (CNN) designs. The exploratory outcomes approve that the EfficientNet performs better in multilabel plant illness classification tasks. Additionally, we have tracked down that a CNN architecture, skip associations, spatial convolutions, and more limited secret layer network impact better outcomes in plant illness characterization.

PS3-7: PS3-7

Chair: Muhammad Syukur (Mae Fah Luang University, Thailand)

10:20 ***Facilitating Decision Making through Forensic Audit for Granting Loans and Detecting Frauds in Banks***

Anushka Kini (Symbiosis Institute of Digital and Telecom Management, India); Abhijit V. Chirputkar and Pankaj Pathak (Symbiosis Institute of Digital and Telecom Management)

In 2021, the Indian economy is predicted to grow at a rate of 11.5 percent, making it one of the fastest-growing economies in the world. The Banking Sector, like any other economy, is the backbone of the Indian economy. Since the advent of banking sector reforms and economic liberalization in 1991, it has witnessed significant growth. Even though the Reserve Bank of India

effectively regulates banks, the speed in growth brings inefficiencies in the systems due to the sheer number of transactions and the need to provide loans quickly. This results in offering Loans to various sectors without focusing on the quality of loan advances, thereby resulting in a rise in fraud in the financial industry. In the last 10-12 years, there was a considerable jump in fraud cases, especially in loans and advances, as per RBI's annual report. The Reserve Bank of India mandated banks to use forensic auditing as a fraud prevention and investigation tool in May 2015. It is gradually gaining traction as a novel and powerful tool for auditors to detect fraud early on. This paper aims to understand the role of Forensic Auditing in unearthing Bank frauds, especially while making decisions for granting Loans and Advances area like detection of frauds, by using literature review methodology, exploratory and case study analysis to give more insights into Forensic Auditing

10:40 ***Study Of Security Postures In Payment Gateways Using a Case Study Approach***

Abhishek Nagre (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The emergence of e-commerce has given birth to many big and small online businesses which are operating through apps and websites. These apps and websites use payment gateways to facilitate the online monetary transactions between the business and the customer. As these payment gateways handle sensitive customer data and act as enablers for online transactions, it is most vital to pay attention to the security of their framework. The objective of this paper is to find ways to optimize the security of the payment gateways by performing secondary research and analysing all the former cases of breaches that happened at the payment gateway level and then come up with a standardized set of security measures to prevent future attacks. This paper is unique as it will help the government to find out whether the current regulations are needed to be revised and updated. The study will also aid the companies and the payment aggregators to adopt certain must-have security aspects in their operation framework to prevent future breaches.

11:00 ***Detecting Corporate's Earnings Manipulation in Thailand***

Phasuk Nithibandanseree and Kiki Khoifin (Mae Fah Luang University, Thailand)

This study detects earnings manipulation among Thai listed firms from 2014 to 2019. We apply six accrual models, including Jones Model (1991), Modified Jones Model (1995), DD Model (2002), Modified DD Model (2002), Performance-matched Jones Model (2005), and Performance-matched Modified Jones Model (2005), to detect earnings manipulation or often referred to as earnings management, and explore the explanatory power of each model. This study utilizes 1,854 firm-year observations, and the findings indicate that the Modified DD Model (2002) is the most suitable model among six accruals models, due to this model incorporating two essential components of the company's earnings (cash flows and accruals), as other models only consider either cash flows or accruals.

11:20 ***Security And Usability of User Authentication for Fintech Data Protection in Indonesia***

Muhammad Manggala, Ida Wahidah and Ahmad Hanuranto (Telkom University, Indonesia)

Fintech application has been applied massively in the globe, but nowadays, there are several fintech services that have been hacked due to security standards in applying for user data protection is not sufficient. Based on the market survey of 350 respondents, 95% of respondents use payment fintech and 24.6% of loans fintech. The challenge of implementing fintech is to provide a convenient and fast process, while still focusing on user security and authentication processing time. 63,9% of respondents are willing to spend time on data security and 50,9% are willing to replace the device according to the expected safety. Technically, the average fingerprint accuracy rate is 91.64% and the average facial recognition accuracy rate is 91.82%. This number exceeds the minimum standard of NIST research and Google's Android is 90% of accuracy. The fingerprint processing time and the facial recognition processing time is approx. 18.24 msec and 31.83 msec. These results are applicable as the basis for implementing biometrics and factors Two-way authentication can be explained further in the regulation.

Thursday, March 24 10:20 - 12:00 (Asia/Bangkok)

PS3-8: PS3-8

Chair: Sarutanan Sopanik (Mae Fah Luang University, Thailand)

10:20 ***A study of Cyber-defense strategies adopted by major Public and Private sector Banks of India***

Neha Patidar (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The banking and financial services sector and banking institutions across the globe faces three hundred percent greater cyber-attacks as compared to any other industry. The increasing reliance of the modern banking sector on the internet and computer technologies to operate their businesses is the major factor behind the increasing threats and security breaches in recent years. The cyber-attacks against banks increased by 238% from February 2020 to April 2020. More and more banks are adopting Cyber Security frameworks to protect them against cyber-crimes. The goal of the study is to examine the cyber defense strategies adopted by major Public and Private sector banks of India. This paper analyzes the cyber-security and risk assessment measures taken by the banks of India. The paper further suggests additional measures to be adopted by the Banks. The study is a comparative analysis of private and public sector banks to know what banks are doing to protect themselves against cyber-attacks. Secondary data has been taken from the reports published by the Reserve Bank of India and the Annual reports of the Top Public and Private sector banks of India. The study provides implications to Banks for assessing their Cyber-security frameworks. After the comparative analysis, the shortcomings of some banks will become known. This will benefit the banks in discovering the areas where they can focus and improve.

10:40 ***Adoption Of Blockchain In Trade Finance And Its Impact On Financial Decision Making***

Abhishek Basumatary (Symbiosis International Deemed University, India); Sujata Joshi (Professor, SIDTM, India)

Blockchain has been able to create a significant impact in the fields of banking, investing and cryptocurrency in the last few years. It's recent deployment in the area of trade finance has also shaped up the area of banking and finance. Blockchain has been able to overcome the drawbacks that were eminent with the traditional methods of trade financing like cost, time and errors involved in it. Big and established companies, especially operating in the trading and shipping industry have been able to deploy blockchain methods in their financial transactions and have observed significant impacts due to it. By incorporating Blockchain, automated financial decision making is also made possible as the technology is able to confirm the authenticity of the transactions on its own. However, a comprehensive study of the technology in the area of trade finance is minimal. Thus, the aim of this paper is to study the adoption of blockchain technologies in trade finance and their impact on financial decision making, while also providing future implications for the same. The approach followed is of a case study approach that would make use of a few major use cases of established organizations in the sectors of trading & investment and technology & IT consulting with respect to the method of blockchain that they adopted. The study would be useful for academicians, the subject matter experts, and the organizations operating in the sectors mentioned as they would be able to take decisions to deploy the technology to their benefit.

11:00 ***Intention to use artificial intelligence services in financial investment decisions***

Vijayakumar Bharathi. S (Symbiosis Centre for Information Technology (SCIT) & Symbiosis International University, India); Dhanya Pramod (Symbiosis Centre for Information Technology(SCIT), Symbiosis International(Deemed University) (SIU), India); Ramakrishnan Raman (Symbiosis Institute of Business Management Pune & Symbiosis International University India, India)

Manufacturing, Financial Services and the telecom sector have made immense use of technology and automation. Use of artificial intelligence in choosing travel routes or searching for the right item to buy on an ecommerce platform is popular with postgraduate students. The paper dwelves on aspects related to student's technology readiness along with awareness about the artificial intelligence (AI) services in financial services impacts their intention to use AI in financial investment decisions. Specific aspects including Optimistic view towards technology, Innovative approach towards technology, Technological uneasiness and Lack of trust in technology and its influence on use of AI tools for taking investment decisions by post graduate students, who have work experience in the fintech domain has been studied. Results indicate Optimistic view towards technology, an innovative approach towards technology and awareness have a positive influence on their intention to use financial robots / AI tools while taking investment decisions and technological uneasiness, lack of trust in technology have a negative influence. Easiness of use and utility of the AI tools also have a significant influence on students while they consider using financial robots / AI tools for investment decisions.

11:20 ***Design and Analysis of Optimized Portfolios for Selected Sectors of the Indian Stock Market***

Jaydip Sen (Praxis Business School, India); Abhishek Dutta (Praxis Business School, Kolkata, INDIA,

India)

Portfolio optimization is a challenging problem that has attracted considerable attention and effort from researchers. The optimization of stock portfolios is a particularly hard problem since the stock prices are volatile and estimation of their future volatilities and values, in most cases, is very difficult, if not impossible. This work uses three ratios, the Sharpe ratio, the Sortino ratio, and the Calmar ratio, for designing the mean-variance optimized portfolios for six important sectors listed in the National Stock Exchange (NSE) of India. Three portfolios are designed for each sector maximizing the ratios based on the historical prices of the ten most important stocks of each sector from Jan 1. 2017 to Dec 31. 2020. The evaluation of the portfolios is done based on their cumulative returns over the test period from Jan 1, 2021, to Dec 31, 2021. The ratio that yields the maximum cumulative returns for both the training and the test periods for the majority of the sectors is identified. Additionally, the sectors which exhibit the maximum cumulative returns for the same ratio are also identified. The results provide useful insights for the investors in the stock market in making their investment decisions based on the current return and risks associated with the six sectors and their stocks.

11:40 ***Multi-Criteria Decision Analysis of the Logistics Companies using TOPSIS Model***

Weng Siew Lam (Universiti Tunku Abdul Rahman (UTAR), Malaysia); Pei Fun Lee and Weng Hoe Lam (Universiti Tunku Abdul Rahman, Malaysia)

Transportation is a vital aspect of logistics and international maritime activity. Transportation equipment has to be built strongly, tested wisely and maintained timely to prevent untoward incidences during shipping. However, the bottom lines of companies in this business line often face challenges in funding their operations and this has impeded their growths in the international arena. With this, our paper intends to analyze these logistics companies financially using a comprehensive range of financial ratios and Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) model. Using a fresh framework proposed, our paper finds that CHGP is the best performing public logistics company in this business line. We hope that this paper could provide insights to the management team, prospective investors and current shareholders in the decisions to improve the economic condition of the logistics business in Malaysia to achieve the Shared Prosperity Vision 2030.

PS3-9: PS3-9

Chair: Wachira Ponboon (Mae Fah Luang University, Thailand)

10:20 ***Unpacking the efficiency of foreign direct investment: Evidence from the borders of Thailand***

Nathapornpan Piyaareekul Uttama and Mullika Jantakad (Mae Fah Luang University, Thailand)

This paper aims to evaluate the efficiency level of foreign direct investment in 22 border provinces of Thailand from 2008 to 2018 and investigate the effects of border factors associated with FDI inflow using a stochastic frontier analysis approach. The results demonstrate that the actual FDI is far below the estimated efficient level and that there exists a considerable gap (74.3%) for increasing the efficiency in attracting foreign investment inflow to the border areas. Economic size, relative labor to land endowments, boundary distance, economic corridor connectivity, and regional economic integration have positive and significant effects on FDI that tend to improve the efficiency of FDI in Thailand's border provinces.

10:40 ***Economic implications of Spectrum Bands used in 5G: A Multi-Country Study of Spectrum Allocation***

Santosh Biradar and Giri Gundu Hallur (Symbiosis International Deemed University, India)

5G technology is the latest and prevalent nowadays, not only in the field of telecommunication but in every sector such as health care, automatic transportation, smart cities, governance, agriculture, and whatnot. The role of 5G would be crucial in the growth and development of each sector and industry. 5G is an advanced wireless communication technology that uses various frequency bands for various purposes and applications. 5G would play a crucial role in low latency, enabling critical communication and offering significantly higher speed for massive IoT. The 5G system does include Ultra-Reliable Low Latency Communications (URLLC), enhanced Mobile Broadband (eMBB), and massive Machine Type Communications (mMTC). The ranges of frequency bands are basically divided into three-level, High-frequency bands, medium frequency bands, and Low-frequency bands. The paper discusses various frequency spectrum bands that 5G is/will be operating over. A detailed study

of some countries with cross-country comparison, a comparison of 5G parameters considered in the allocation of 5G spectrum bands, a study of 5G spectrum allocation status, and recommendations for spectrum allocation in India are made.

11:00 ***A Study on the impact of 5G on the Banking Industry:: An Economic Impact Perspective***

Priyanka Barman and Giri Gundu Hallur (Symbiosis International Deemed University, India)

Many banking and financial institutes have begun to cooperate with recent trends and technologies to improve services in the recent era. The emergence of 5G technology provides banking and financial institutions with new choices. The impact of the 5G ecosystem on financial enterprises and mobile banking is noticeable.5G will help modernise the banking and financial sector as part of the telecom revolution, and will be a driver for exponentially increasing clients and market share for financial institutions and financial technology. 5G is expected to increase real-time mobile commerce and high-frequency commerce, according to the financial services industry. Here in this study, we have tried to present an overview of Banking 4.0, Branch-less banking and Open banking and how 5G will help achieve it. In this paper, we have tried to aggregate insights from various sources related to 5G use cases from the perspective of the Banking Industry both from Indian perspective as well as the world.

11:20 ***To Predict Customer Churn By Using Different Algorithms***

MD Sayedur Rahman (Bangladesh University of Business & Technology - (BUBT), Bangladesh); Md Sahrial Alam and Md Ikbal Hosen (Bangladesh University of Business and Technology, Bangladesh)

Customer churn prediction is the supreme thing for every company. Every company is facing that issue. A company can easily predict how many customers will stay and take their service and how many customers will omit their service. This paper predicts if their customers will take their service in the future or not. In our paper, we have used the " Impact Learning" algorithm to predict customer churn. The data is trained by the impacts of features from the intrinsic rate of natural increase in the impact learning algorithm. Here, the training set of data is numerical data. Our proposed model is implemented by using three stages namely data collection, identifying null value, and data preprocessing. This paper has also shown the performance comparison between Logistic regression, Impact learning, and Artificial Neural Network algorithm. From the comparison, we can see that the Impact learning algorithm gives the best and higher accuracy than the other two algorithms.

11:40 ***How Macroeconomic Variables Affect Islamic Banking in Indonesia, Malaysia and Pakistan***

Dewi Ayu Muliani (University of Syiah Kuala & Syiah Kuala University, Indonesia); Suriani Suriani (Universitas Syiah Kuala & USK, Indonesia); Chenny Seftarita (Universitas Syiah Kuala, Indonesia)

Islamic banks have continued to experience significant growth in the last few decades. Based on IFSB data, Muslim countries have always managed to reach the top position for years. However, this condition is not experienced by Indonesia and Pakistan, which have the largest Muslim population. Using data from three countries; Indonesia, Pakistan and Malaysia, we estimate the relationship between Islamic bank assets and macroeconomic variables during 2001-2020. Using Panel Vector Error Correction Model (PVECM) to analyze the relationship between total assets (TA), exchange rate (ER), money supply (M2), and GDP per capita (GDPC). The results of the study found that there was a long-term relationship between research variables. However, in the short term only the money supply variable (M2) affects the total assets of Islamic banks (TA).

PS3-5: PS3-5

Chair: Patcharaporn Panwong (Mae Fah Luang University, Thailand)

10:20 ***XAI Approach to Improved and Informed Detection of Burnt Scar***

Tonkla Maneerat (Mae Fah Luang University & AIE Center-Mae Fah Luang University, Thailand)

Forest fire is a problem that cannot be overlooked that occurs every year and spans many areas. GISTDA has recognized this problem and created the model that is used to map burn scars using satellite imagery as input and variable for the model. However, it does not make sense to trust the machine's decision-making to solve sensitive problems, it is necessary to have more than a percentage of the prediction accuracy. Reasoning and annotation of the results are essential for this. The XAI approach is the answer to this problem. In this work, we have used the SHAP approach for describing predictive variables of complex

neural models such as DNN, which can be used to optimize the model and provide overall accuracy up to 99.85 % for this work. Moreover, to show stakeholders the reason and the contributed factors involved such as the various indices that use the reflectance of the wavelength (e.g. NIR and SWIR). Therefore, the purpose of this study is to use the existing model to optimize the forest fire burn scar classification and describe the predictive features for decision-making by those involved.

10:40 ***Scene Classification with Simple Machine Learning and Convolutional Neural Network***

Simon Yosboon (Mae Fah Luang University & AIE Center, Thailand)

Scene classification has drawn a great deal of attention among scientists in the past decade. It focuses on developing a method that can be used to classify scene images into pre-defined categorizes. Unlike human, identifying discriminative features are still the main burden to accomplish this goal. As such, a question arises to determine the appropriate level of feature descriptors, i.e., fine-grained texture/shape or recognizable objects/components. In this paper, we like to compare if a simple machine learning method can compete with the deep learning algorithm. Since the former requires a feature vector of each training instance, we have come up with a method to extract object-based features from images. YOLOv3 that is a pre-trained model for object detection is exploited to produce the object-based features. Following that, four machine learning methods are evaluated using this training set, while the deep learning model is built using original images. The experiment shows simple machine learning models with object-level features can match the performance of deep learning, which is more demanding in terms of computational resources and time.

11:00 ***The Detection Method for XSS Attacks on NFV by Using Machine Learning Models***

Korrawit Santithanmanan (Mae Fah Luang University & AIE Center, Thailand)

This paper focuses on Cross-site Scripting (XSS) vulnerabilities that occur in the web-based management interface of Cisco Enterprise's Network Function Virtualization Infrastructure Software (NFVIS). This paper explores one of the security concerns called openness and programmability on the control plane of NFVI that leads to XSS attacks. The attacker uses the XSS to inject malicious code, typically JavaScript, and send it to other users in the form of a URL to identify which URLs are malicious, the Machine Learning methods including k-NN, Decision Tree, SVM, and Gaussian Naive Bayes classification model are used in this paper to classify the pattern of the attacks. In addition, the performance of each model is also evaluated.

11:20 ***Finding The Available Website Name By Using Naive Bayes Classification***

Kanokphon Kane (Mae Fah Luang University & AIE, Thailand)

This study aims to positive good text or negative text sentiment on websites. The property consists of the URL of the website and results in a positive website and a negative website that should be blocked in access to that. In this research, a computational approach for website classification based on features retrieved from URLs is proposed to must compare the concept of classification with the Multinomial Naive Bayes of independence property data by comparing the ideal models for discrete data Multinomial Naive Bayes. In addition, have been used other machine learnings are Decision Tree and Logistic Regression to compare which method is suitable for the analysis of this data set and which has the most accuracy with use data divided into 3 sets as follows: Training data, Test data, and External data about racist and sexist tweets sentiment to provide machine learning. The result of the Multinomial Naive Bayes has the highest accuracy of 95.14 percent for the training model.

11:40 ***Quantifying the Severity of Loose Smut in Wheat Using MRCNN***

Deepak Kumar (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Wheat is one of the most common staple foods in the world. According to national agricultural research, an entire 40% of wheat grain quality has been decreased due to wheat diseases. The wheat disease mainly affects the wheat plant. Sometimes, the wheat disease damages the whole wheat plant. When the whole wheat plant is damaged, the quality of wheat grain is decreased. There are different varieties of wheat diseases such as fungal, bacterial, and virus-based diseases. One of the most common loose smut fungal diseases that decrease the grain quality in each wheat spikelet. Therefore, the identification of wheat diseases is important. In this paper, an automatic system for the identification of loose smut wheat disease along with its severity is proposed. The identification system uses 2000 RGB images which have been collected from secondary sources. Among all datasets, a total of 800, 700 images have been randomly selected for training and testing purposes in the Mask RCNN model. Through Labelme software, the images are labelled with ground and truth labels. During identification, our proposed system achieves a 97.8% F1 score for loose smut identification with bounding boxes. The severity of loose smut has been calculated

through the disease severity index. With the help of DSI, a total of 63% severity for loose smut has been estimated in different wheat spikelets.

PS3-6: PS3-6

Chair: Pattaramon Vuttipittayamongkol (Mae Fah Luang University, Thailand)

10:20 ***Improved Shopping Experience Through RFID Based Smart Shopping System***

Angel Yong (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia)

Shopping is considered as an essential activity for many households and is negatively impacted ever since the COVID-19 pandemic had begun. People are panic buying and crowding without social distancing and practice hygiene after exchanging physical touch with objects or cashiers at retail stores. A Smart Shopping System that utilizes RFID and integrated with mobile website technology can improve efficiency and effectiveness for customers to shop even during a pandemic in a more controlled manner. It can be achieved by integrating closely both hardware and software over an active internet connection to send and receive data for real-time updates for each respective customer. The research aims to facilitate users for an improved shopping experience that highlights the accessibility of easy, contactless purchasing, engaging marketing and simultaneously reduces direct contact with public possessions during the coronavirus (COVID-19) pandemic. An extensive discussion of the existing similar systems reviews, literature review and the current developments are performed in depth. The research gathered public insights through a quantitative research approach and applied the gather data for meaningful information in order to recommend an efficient solution. With the creation and visualization of a prototyping model, the researcher demonstrated how a Smart Shopping System could achieve efficiency and effectiveness in a retail store on a small scale.

10:40 ***IoT Based Reverse Vending Machine to Identify Aluminium Material and Allocate Point Reward***

Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia); Kwang Qin Yi (Asia Pacific University of Technology and Innovation (APU), Malaysia)

A Reverse Vending Machine (RVM) allows people to exchange their recyclable items for rewards. These are machines that can identify, sort, collect and process used drink cans. The research helps to understand how IoT can be applied in the RVM system to increase automation and improve efficiency. The reason for using quantity measurement on giving rewards has been explained along with facts. Every element associated with each layer of system architectures is thoroughly clarified and elaborated in the domain segment. Several related works and similar systems are presented and discussed, concluding that a cashless approach can more likely attract people and is more secure and efficient to use. Finally, this research provided a straightforward procedure to implement the Reverse Vending Machine (RVM) with ease . Every system has its benefits and drawbacks; the limitations of the proposed method are listed for further enhancement.

11:00 ***Recommendations for Developing an IoT based Smart Mirror with Gesture Control***

Chiew Cae-Li (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia)

Mirrors are in use of humans for centuries as it plays an important part in their lives. A conventional mirror mainly serves users to only view their reflection. On the other hand, a smart mirror is a mirror with additional capabilities. In this exponentially developing world, information is always right at our fingertips. However, the presence of various options of gadgets may cause difficulty for users when keeping track of their productivity unless they are all in sync. Integrating technology into something which people use daily (the mirror), fits in with their hectic life requirements seamlessly. This research provides recommendations for developing a smart device ('Smart Mirror') which aims to simplify the users' lives by allowing them to multitask while being productive. This research first reviews the existing literature and similar systems and then provides recommendations for hardware, tools and

development methodology for developing a Smart Mirror. Finally, a quantitative research approach is used to accumulate and analyse requirements in this regard.

11:20 ***Intelligent Computing based Soccer Sports Management for Effective Estimation of Match Outcome***

Karun Madan and Kavita Taneja (Panjab University, Chandigarh, India); Harmunish Taneja (DAV College, Sector 10, Chandigarh, India)

The integration of intelligent computing with sports management can give new dimensions to sports globally. In this paper, a comprehensive study of major intelligent computing techniques for addressing various challenges and issues in sports management is presented. An experimental study has been conducted by implementing three machine learning techniques i.e., SVM, Decision tree and Random forest for estimating the match outcome on different match scenarios. This experimental study has been performed on a standard dataset on English Premier League soccer tournament to estimation the match outcome. The estimation of match outcome in soccer is a difficult task as it is stochastic process and many probabilistic factors can affect the final results.

11:40 ***Assessment of Building Damage on Post-Hurricane Satellite Imagery using improved CNN***

Adit Ishraq and Aklima Lima (Bangladesh University of Business and Technology, Bangladesh); Md. Mohsin Kabir and Md. Saifur Rahman (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

Damage assessment is one practical method for adopting best practices for obtaining speedy and dependable attention during natural calamities such as a hurricane. Lately, calamity researchers have often used satellite imagery to predict the number of damaged properties. It can detect the damaged structures in time by integrating satellite imagery and Convolutional Neural Network (CNN) transfer learning. Consequently, choosing the variables of transfer learning success in this scenario is demanded. To identify damaged structures post-hurricane, we introduce a technique based on VGG16 that utilizes publicly available satellite imagery and geolocation features of the affected region. The global average pooling layer substitutes the fully connected layer to minimize parameters and enhance convergence speed. The experimental results indicate that the proposed model's overall accuracy for post-hurricane image classification can reach 0.98 percent. Our proposed method approximates the classical CNN, VGG16, VGG19, AlexNet and surpasses their performance outcome.

Thursday, March 24 12:00 - 13:15 (Asia/Bangkok)

Lunch: Lunch

Thursday, March 24 13:15 - 14:00 (Asia/Bangkok)

PN3: Plenary Session 3

Solving Cardinality Constrained Portfolio Selection Problems Using Closest Correlation Matrices

Thursday, March 24 14:00 - 15:40 (Asia/Bangkok)

PS4-5: PS4-5

Chairs: Houda Alaya (BADM Tunis Business School, University of Tunis, Tunisia), Tipavinee Suwanwong Rodbundith Rodbundith (Mae Fah Luang University, Thailand)

14:00 ***Personalized production in Industry 4.0: a CONWIP approach***

Daniel Rossit and Guido Vinci-Carlavan (Universidad Nacional del Sur, Argentina)

Production technologies based on Industry 4.0 allow the capacity and flexibility of production systems to be increased, enabling mass customization of production. In this work, a production problem is considered where the customization of production is extreme, resulting in unique products. This type of production is known as One-of-a-Kind Production (OKP). Naturally, this type of production places great demands on the planning system, since the standardization of production is reduced to a minimum. In this sense, it is proposed to use a production control strategy based on CONWIP, which seeks to maintain the level of work-in-progress at constant levels. In turn, to improve the performance of the CONWIP strategy, new dispatch rules are studied and designed to improve the level of service provided to the client

14:20 ***An Overview of the Cash Transportation Problem***

Houda Alaya (BADM Tunis Business School, University of Tunis, Tunisia)

One of the relatively new study topics in Vehicle Routing is the Cash Transportation Problem. This problem takes into consideration the security in planning vehicle routes. Few papers have focused on the cash transportation problem. Minimizing the travel cost and/or minimizing the transportation risk are the objective functions considered in these problems. This paper is the first overview of the cash transportation problem addressed in the literature. We classify these problems into two categories, mono-objective and multi-objective problems.

14:40 ***Evaluation of a low-cost on the Road Unit for augmenting traffic management decision making***

Christos Spandonidis (Prisma Electronics, Greece); Fotios Giannopoulos (Prisma Electronics S.A., Greece); Elias Sedikos (Prisma Electronics UK, United Kingdom (Great Britain)); Dimitris Reppas and Kostas Sakatis (Prisma Electronics S.A., Greece); Panagiotis Theodoropoulos (University of Patra, Greece)

The advent of the 4th Industrial Revolution has completely changed the landscape of many scientific disciplines. An extension of the Industry 4.0 revolution concerns the Internet of Vehicles, integrating interconnected vehicles in a network exchanging information, rapidly enhancing efficient transportation and the passengers' and pedestrians' safety. In the context of the ODOS2020 project, a sensing networking architecture is presented to conduct vehicular detection based on MEMS magnetometers, as well as allowing predictive maintenance of the infrastructure, contributing to the increase of road safety. The integrated solution is intended to be of low cost and cover all types of vehicles. The focal point of the current work is on evaluating the prototype On-the-Road Unit laid on the road for detecting bypassing vehicles and measuring their speed and movement direction by employing low-cost magnetic sensor modules. The developed system is able to detect vehicle movement, alongside its direction and speed using a single device acquiring data from a number of low-cost sensors. The developed system has been evaluated in controlled and real environments.

15:00 ***Coalition Formation for Horizontal Supply Chain Collaboration: A Multiobjective Approach***

Mirna Abou Mjahed (Neoma Business School, Lebanon); Fouad Ben Abdelaziz (NEOMA Business School, France); Hussein Tarhini (American University of Beirut, Lebanon)

By collaborating horizontally, firms are expected to achieve considerable improvement. Most optimization approaches in coalition-based SC collaboration are single objective targeting cost reduction or profit maximization. Real-world decision problems usually require the investigation of more than one criterion to achieve a sustainable progress. In this paper, we study the collaborative facility and fleet sharing among firms at the same horizontal layer of the supply networks and explore the benefits of forming coalitions. We consider the case of suppliers operating their own distribution centers. Such firms have incentives to minimize their operational costs by optimizing inventory levels at warehouses, replenishment process and distribution to customers. The aim is to look at the trade-off between cost of the logistic service (warehousing and transportation) and maintaining customer satisfaction and loyalty by keeping, when possible, delivery service internal to each firm. The problem is a coalition formation modeled as a cooperative multiobjective game.

15:20 ***Applications of Pandemics Impact on Supply Chain Decisions***

Maysaa Khalil Jaafar (NEOMA Business School, Lebanon); Fouad Ben Abdelaziz (NEOMA Business

School, France); Bacel Maddah (American University of Beirut, Lebanon)

We analyze the impact of pandemics disruptions on the decision related to supply chain management. Two models are developed and a closed-form solution is obtained for the optimal order size. In our first model, we consider the classical EOQ (Economic Order Quantity) model with Bernoulli supply having a disruption probability related to the pandemic situation. In our second model, we consider the classical EOQ (Economic Order Quantity) model with Binomial supply under pandemic situation. At last, we suggest ideas for future research.

PS4-6: PS4-6

Chair: Sarutanan Sopanik (Mae Fah Luang University, Thailand)

14:00 ***A Low-Cost Embedded Security System for UAV-Based Face Mask Detector Using IoT and Deep Learning to Reduce COVID-19***

Nashwan Othman (Knowledge University, Iraq); Ilhan Aydin (Firat University, Turkey & Firat, Turkey)

Nowadays, the most effective method against the virus is wearing a mask. Hence, it is fundamental to wear a mask appropriately at open places like general stores and shopping malls. This paper proposes a novel human face mask detection method from UAV-captured frame sequences to solve the aforementioned problem. The proposed approach involves an offline stage and an inference stage. The offline stage generates the mask or no-mask by utilizing a convolutional neural network. We trained our model on a face mask dataset, and this enhancement allows the suggested system to obtain high accuracy in detecting unmasked people. The inference stage uses the already generated model to detect no mask humans and sends the alert to the smartphone-based Internet of Things. At this stage, Jetson nano was used to implement an embedded powerful real-time application for UAV-based face mask detection that runs at high frames per second. The proposed system monitors and detects people who have not worn a mask. Also, we used IoT techniques to send the pictures and notifications to the nearest police station to apply forfeit when it detects unmasked people. The main contributions in this paper lie in adjusting the deep learning, embedded platforms, IoT techniques, and Tello drone, generally dedicated to detecting unmasked people at a low cost. On average, detection accuracy is 99% based on the experimental evaluation of the proposed deep learning model for UAV-based face mask detection on the provided dataset. Overall, the proposed method can help decrease the spread of diseases such as COVID-19 and other transmissible diseases.

14:20 ***Wireless Sensor Networks Lifetime Improvement Using Greedy Algorithm***

Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Berhan Oumer and Eyayaw Zewdu (Arba Minch University, Ethiopia)

One of the most significant difficulties in Wireless Sensor Networks (WSNs) is energy efficiency, as they rely on minuscule batteries that cannot be replaced or recharged. In battery-operated networks, energy must be used efficiently. The network lifetime is an important metric for battery operated networks. Several approaches are available to improve the network lifetime; such as data aggregation, clustering, topology, scheduling, rate allocation, routing, and mobile relay. Therefore, in this paper, the authors present a method aimed at improving the lifetime of WSN nodes by using a greedy algorithm. The proposed Greedy Algorithm method is used to extend the network's lifetime by dividing the sensors into a number of disjoint sets while satisfying coverage requirements. Comparatively the proposed greedy algorithm has improved network lifetime than heuristic algorithms. The method was able to generate a greater number of disjoint sets.

14:40 ***A Low-Cost Embedded Car Counter System by using Jetson Nano Based on Computer Vision and Internet of Things***

Nashwan Othman (Computer Engineering Department, College of Engineering, Knowledge University); Zahraa Zakariya (Knowledge University, Iraq); Bishar Ibrahim (Duhok Polytechnic University, Iraq)

With the increasing volume of cars in traffic and the global traffic increasing exponentially, it has become critical to manage traffic as a challenge in the most developed countries. To address this issue, the intelligent traffic control system will use

automatic vehicle counting as one of its core tasks to facilitate access, particularly in parking lots. The primary benefit of automatic vehicle counting is that it allows for managing and evaluating traffic conditions in the urban transportation system. The new era of technologies such as the Internet of Things and computer vision has transformed traditional systems into new smart city networks. Because of the proliferation of computer vision, traffic counting from low-cost control cameras may emerge as an appealing candidate for traffic flow control automation. This paper proposed a low-cost embedded car counter system using a Jetson nano card based on computer vision and IoT technologies to implement the offered system. In the proposed system, we apply a combination of background subtraction and counters, trackable objects, centroid tracking, and direction counting. Moreover, we implement the MoG foreground-background subtractor method. The proposed system is connected to the Internet using Telegram API to send notifications to smartphone hourly to analyze traffic congestion. In addition, we compared the performance of Jetson nano with the Raspberry Pi4 platform.

15:00 ***Peculiarities of Application of Information Technologies in Footbal and Futsal***

Myroslav Panchuk (Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine); Taras Panchuk (Ukraine, Ukraine); Andrii Panchuk (Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine)

The paper investigates and systematizes materials on the application of information technologies in the sphere of football and futsal.It is established that, as of today, a number of information technologies are in operation, which help in decision making for the successful organization of sports competitions, effective performance of training process, and prevention of sports injuries. Currently, one of the most timely topics is the introduction of video assistant referee (VAR) system to the competition process. The novelty of the paper is the execution of an investigation of (VAR) system application peculiarities in the football championship of Ukraine and perspectives of the system use in the course of futsal competitions.Also, a correlation between the introduction of effective information technologies to the training process and an improvement of the team's results along with a decrease in sports injury rate was established. Keywords - information technologies, football, futsal, video assistant referee (VAR) system.

15:20 ***A Methodology for An Intelligent Legal Agent***

Furkh Zeshan (COMSATS University Islamabad, Lahore Campus, Pakistan); Shahzad Sharif (COMSATS University Islamabad (CUI), Lahore Campus, Pakistan); Adnan Ahmad (COMSATS University, Pakistan); Syed Tanweer Shah Bukhari and Wajahat Qazi (COMSATS University Islamabad (CUI), Lahore Campus, Pakistan)

Due to the ever-increasing of legal cases in courts, thousands of cases cannot be processed on time due to inadequate resources and inexperienced Lawyers. The situation can be improved with automated systems like the usage of judicial decision support systems in courts. In this regard, numerous research studies exist in which legal case resemblance-based forecasting methods by involving chatbots are proposed. However, a study in which two-way communication with a chatbot for a legal case discussion and the recommendation is not proposed. So, keeping in view the dire need for a system that may facilitate judiciary and Lawyer's community, Intelligent Legal Agent methodology is proposed in this paper to assist Lawyers and Judicial Members in decision-making.

PS4-3: PS4-3

Chair: Supannika Khuanmuang (Mae Fah Luang University & School of Management, Thailand)

14:00 ***Management decisions modeling using the intellectual capital potential***

Ivanna M Dronyuk (Lviv Polytechnic National University, Ukraine); Iryna Moyseyenko (Lviv State University of Internal Affairs, Ukraine); Roman Zhelizniak (Lviv Polytechnic National University, Ukraine)

To analyze the management risks and determine the level of their impact on the the enterprise's results, it is proposed to introduce internal monitoring of multiplicative indicators of resource potential. The internal monitoring system provides a combination of rapid methods of determining financial potential and the level of use of intellectual assets. Modeling of

multiplicative indicators for using of financial potential and intellectual resources is an effective tool of administrative decisions maintenance of acceptance. The presented algorithm of the efficiency for using intellectual assets analysis of provides the decision and acceptance of administrative decisions problems of risk reduction. Risk minimization is ensured through the factor analysis using the intellectual resources potential.

14:20 ***Role of Human Intuition in AI Aided Managerial Decision Making***

Kumeel Rasheed (Bahria University Islamabad, Pakistan); Merium Fazal Abbasi and Muhammad Bilal (Bahria University, Pakistan)

Managerial decision making is considered to be an interplay of human intuition and rationality. With the advent of Artificial Intelligence (AI), the rational part of decision making can be delegated to algorithms because of their superior efficiency in this domain. But intuitive part cannot be entrusted to algorithms with same ease, as it involves affective element which is considered to be a distinctive feature of humans. This paper is aimed at determining the role of intuition in Ai-aided decision making and ways through which intuition can be incorporated into AI-aided decisions. By reviewing literature on the subject of decision making, AI and intuition; it has been concluded that intuition is crucial for strategic decisions. It can be integrated in AI aided managerial decisions in two ways i.e. by developing a model that makes decisions by interaction of humans and AI, or by replicating human intuition through AI thus leading to completely autonomous decision making system that has emotional intelligence as well.

14:40 ***Impact of Business Strategy On Project Management Elements Focus Moderating Role of Competition Attributes in Textile Industry***

Kumeel Rasheed (Bahria University Islamabad, Pakistan); Muhammad Bilal and Merium Fazal Abbasi (Bahria University, Pakistan); Bakhtawar Shah Alam Khan (University of Portsmouth, United Kingdom (Great Britain)); Tausif Zahid Chowdhury (Winchester University, United Kingdom (Great Britain)); Iqra Yamin (Bahria University, Pakistan)

In the textile sector, this study analyzed the impact of company strategy on project-management-elements-focus with the moderating effect of competitive characteristics. Business strategy was used as an independent variable in this research. Competition qualities, on the other hand, have been deemed a moderating influence. Furthermore, the dependent variable was chosen to be project-management-elements-focus. Meanwhile, the textile industry of Pakistan has been chosen as the sector to research the link between business strategy, competitive qualities, and project-management-elements-focus in this study. To assess the relationship between variables in this study, an adaptive structured questionnaire based on a 5 Likert scale was used as the research tool to collect data from respondents (project directors, project managers and project supervisors working in the construction industry of Pakistan). Whereas a sample size of 234 respondents were chosen to reflect the full population of 600 people. The information gathered by the questionnaire, which was sent to 234 people, was then evaluated using statistical tools including correlation and regression in SPSS Software. According to the findings of correlation and regression analysis, there is a substantial link between business strategy, competition qualities, and project-management-elements-focus in Pakistan's textile sector. Eventually, the findings of this study show that in Pakistan's textile sector, business strategy has a positive influence on project-management-elements-focus, whereas competition characteristics favorably moderate the link between business strategy and project-management-elements-focus.

15:00 ***Optimal design of a hybrid photovoltaic-wind power system with the national grid using HOMER***

Marwa Mallek (University of Sfax, Tunisia); Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia); Jalel Euchi (GIAD Laboratory, University of Sfax, Tunisia); Yacin Jerbi (National Engineering School of Sfax (ENIS), Tunisia)

Renewable energy sources are certain to play a key role in future energy generation due to the rapid depletion of conventional sources of energy. Solar and wind energy are the major renewable energy sources that have the potential to meet the energy crisis to some extent. However, such sources when explored independently are not completely reliable because of their unpredictable nature. Whereas their use as hybrid energy systems seems to be more reliable and cost-effective, due to the complementary nature of these two resources. In recent years, the research interest towards the utilization of hybrid energy systems in desalination plants. This paper aims to optimize several hybrid energy system models consisting of solar PV, wind, and the national grid in a desalination plant in Tunisia. Optimization is based on the techno-economic analysis of the proposed

energy system is performed by using HOMER simulation software. The simulation will be focused on the net present costs, Levelized cost of energy, produced excess electricity, the Renewable Fraction of Energy, and the reduction of CO2emission for the hybrid energy configurations. Results show that the system photovoltaic, wind, and the national grid is the best energy system installed in the desalination plant.

15:20 ***The impact of the Covid-19 crisis on the liquidity of cryptocurrencies***

Sana Gaied Chortane (Institute of Higher Business studies of Sousse)

We examine the impact of the Covid-19 crisis on the liquidity of crypto currencies. We use 10 crypto currencies for the period from July 31, 2019 (before the crisis) to December 31, 2020 (in the Covid -19 era). We proceeded to calculate the liquidity of the ten crypto currencies during the period from July 31, 2019 to December 31, 2020 using the bid-ask spread AR estimator of Abdi and Ranaldo (2017) to which we then applied a regression (ARMA) to each crypto currency. The results show that the crisis had a positive effect on the liquidity of the majority of the crypto currencies in our sample with the exception of Tether (TET). The crypto currencies neither reacted in the same way to the Covid 19 crisis nor reacted with the same magnitude. Thus, the crypto-currency market as a whole does not depend on other financial markets and that the latter do not affect it significantly.

PS4-4: PS4-4

Chairs: Akkhaporn Kokkhangplu (Mae Fah Luang University & Khon Kaen University, Thailand), Meryem Masmoudi (University of Bahrain, Bahrain)

14:00 ***Analysing Cyber Security and Data Privacy Models for Decision Making among Indian Consumers in an e-commerce environment***

Richa Pramanik (Symbiosis Institute of Digital and Telecom Management, India); Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

While e-commerce evidently addresses consumer needs, businesses and their customers remain vulnerable to cyberattacks that could already be instituted against them. This paper presents an understanding of the antecedent factors that engender concerns among Indian consumers while using e-commerce websites. It aims to measure the perceived threats and data privacy issues that influence an individual's approach to making a risk-informed buying decision. A Quantitative Method of approach has been adopted for this study. A preliminary set of five-point Likert-style questions with several subscales was designed and distributed online to a sample of 165 participants. The results were then evaluated using Exploratory Factor Analysis (EFA) technique to test the hypothesis. Factor Analysis model of the survey underlined several parameters of an individual's perception towards their personal information like- accountability and trust issues, geopolitical and data sharing concerns, and cyber security cognizance. It also provided an empirical understanding of the consumer-perceived model and decision-making behavior for an e-commerce transaction. Based on the findings, better industry-standard e-security frameworks and models can be implemented towards the consumers' decision-making process. Knowledge from all these aspects can be applied to serve the research and practitioner groups. This study approaches a substantial research gap by providing real-time data for the variables affecting Indian customers' attitudes towards security and data privacy concerns as online shopping transactions increase. The results add to a growing body of literature identifying and developing advanced ways to reevaluate the existing compliance strategies across e-commerce websites, making it conducive for the customers.

14:20 ***Neuromarketing in Malaysia: Challenges, limitations, and solutions***

Ahmed H. Alsharif (University Teknologi Malaysia, Malaysia); Nor Zafir Md Salleh (Universiti Teknologi Malaysia, Malaysia)

Neuromarketing has induced great interest in academia and professionals due to the benefits of this field in providing more accurate information about consumers' unconscious/subconscious responses, which is beyond traditional marketing methods such as questionnaires to improve marketing theory and practices. However, although neuromarketing research has developed abroad, its research in both academic and professional is still very limited in Malaysia. This paper aims to explore the experts' perceptions of why the use of neuromarketing is not performing at its required and the solutions to improve neuromarketing implementation in the Malaysian market. For data collection, semi-structured interviews with 16 experts who matched the

set criteria have been adopted. Once the data had transcripted and then categorized into units with common themes. The findings revealed that most interviewees have agreed about several issues which limited the expansion of the neuromarketing implementation in the Malaysian market, such as lack of tools, experts, funding, and ethical issues. Thus, participants have suggested some potential solutions to overcome the limitations and challenges such as collaboration between colleagues, universities, and industry, compliance with the laws and regulations, and funding. The authors have recognized a gap of knowledge in this area; therefore, these findings have significantly contributed to the existing body of the literature and invite more studies to elucidate the situation. Moreover, qualitative research is required to test and measure items revealed from this study's findings.

14:40 ***Does Perceived Organizational Support Have a Moderating Effect on Whistleblowing Intentions?***

Mirna Indriani (Universitas Syiah Kuala, Indonesia); Nadirsyah Nadirsyah (Syiah Kuala University, Indonesia); Dinaroe Dinaroe (Universitas Syiah Kuala, Indonesia)

The purpose of this research was to investigate the impact of Personal Cost (PC), Organizational Commitment (OC), and Perception of Organizational Support (POS) on Whistleblowing Intentions (WI). An online survey of 150 employees in the government sector in Aceh Province was used to obtain data and the Partial Least Square Structural Equation Model (PLS_SEM) was utilized to test the hypotheses. The findings indicated that the higher the personal cost, the less likely a person wanted to utilize whistleblowing as a technique to prevent fraud, even when there was a feeling of strong organizational support. This study did not indicate that organizational commitment affects whistleblowing intention. Nevertheless, the result did show that a sense of organizational support affected the link between organizational commitment and whistleblowing intention to fraud. This study demonstrated that the impression of organizational support was a mechanism that might influence a person's behavior when committing to action.

15:00 ***Ethical and social perception of No-bra culture in Thailand***

Kanyarin Klinkosumsivadol, Thidarat Phubaengmai, Paveethida Taikul, Naruemin Bootchalee and Tosporn Arreeras (Mae Fah Luang University, Thailand)

This research aims to study the opinion of Thai citizens toward women's free nipple culture. There are a lot of movements about women's rights worldwide, whether the free nipple campaign or case study. In Thai society, people are rarely interested in No-bra culture, which is one of the most significant issues ignored for a long time in Thailand even though Thai citizens used to free nipples before. Researchers collected data from 416 people. These people were selected from random populations in some areas in Thailand. To collect the data, researchers used an online questionnaire called Google form to collect the qualitative and quantitative. These were applied to the data analysis by using the Likert scale. The number of respondents knew the No-bra or braless culture and have seen the people who go No-bra everywhere. They disagree with whether the No-bra movement is contrary to the old norms or good morals such as Thai women are reserved, and No-bra is one of the reasons for sexual harassment such as verbal Conduct, visual Conduct, etc. Hopefully, this research will be helpful to those who would like to learn about free nipples culture-influencing society to become more aware of women's rights.

15:20 ***Capital Structure and bank performance under IFRS adoption***

Bayan Mohammed (Near East University, Turkey); Aliya Isiksal (Near East University, Faculty of Economics and Administrative Sciences, Turkey); Ala Fathi (Near East University, Turkey); Sameer Hamdan (Near East University, Cyprus)

This paper attempts to investigate the association among bank capital structure and performance with the IFRS implementation of Turkish banks. The current work employs Dynamic Ordinary Least Square 'DOLS' and Fully Modified Least Square 'FMOLS' to examine panel data of listed Turkish banks. The findings demonstrate that IFRS adoption has a significant and positive effect on Return on Equity 'ROE' and Return on Assets (ROA) in Turkish listed banks. The findings show that Leverage in Turkish listed banks has a negative effect on Return on Equity (ROE) and Return on Assets (ROA). Consequently, the performance of banks is negatively affected by leverage. The bank's size has a significant negative influence on the stock price (SP) and (ROE) of listed banks in Turkey but does not affect the ROA. Banks' rate of growth significantly affects ROE. Thus, adopting IFRS criteria by listed banks in Turkey increases the bank's performance. The current article thus indorses the utilization of IFRS principles in Turkey's banking industry, which will impressively develop the bank's performance

PS4-9: PS4-9

Chair: Popkarn Arwatchanakarn (Mae Fah Luang University, Thailand)

14:00 ***A literature review for Green Smart Home Delivery Problem in urban environments***

Haifa Jammeli (ISG TUNIS, Tunisia); Jerome Verny (NEOMA Business School, France)

Due to growing urbanization, changing climatic and lifestyles, Green logistics has become a global concern. Generally, the objective of a logistics operation is to achieve customer service goals by minimizing costs and maximizing profits. However, in recent years, several companies want to proactively add sustainability objectives, reduce their carbon footprint and support the ongoing efforts to prevent climate change. These considerations have an impact on the transportation concepts and designs. Therefore, a new research problem called Green Smart Home Delivery was introduced. This paper is an overview of the operational research models developed for Green Smart Home Delivery Problems.

14:20 ***Using RapidEye satellite images for the sustainable management of the extension of El Jadida city (Morocco)***

Ikram El Mjiri, Abdelmejid Rahimi, Abdelkrim Bouasria and Mohammed Bounif (Chouaib Doukkali University, Morocco)

The ever-increasing urban extension and the many changes it provokes are the source of many problems both inside and outside the city. To address these issues and manage the city intelligently, one must first assess and map land use changes resulting from urban sprawl. Thus, the main objective of this study was to quantify the urbanisation of El Jadida between 2010 and 2020 to highlight its impact on the environment and make it a smart city. Maps of the spatial distribution of the built-up area were produced based on two high-resolution satellite images (RapidEye). These images were subjected to a series of digital image processing techniques to individualise the built-up areas. The comparison between the two images generated (2010 and 2020), has allowed to deduce that the city of El Jadida has recorded during this period an urban growth of approximately 331 ha, an increase of 17% in 10 years. This comparison also shows that the urban expansion in El Jadida is random and generally to the detriment of agricultural land. Thus, to manage this urban expansion intelligently, it must be directed towards non-agricultural land along the Atlantic coast

14:40 ***Applying machine learning to the study of environmental dynamics and sustainable management of the Argan grove in the El Guerdane region (Souss plain, Morocco)***

Abdelmejid Rahimi, Ikram El Mjiri and Abdelkrim Bouasria (Chouaib Doukkali University, Morocco); Fatna Zaakour (Université Chouaib Doukkali, Morocco & Higher School of Technology (EST) Sidi Bennour, Morocco)

The forest ecosystem of the Argan grove in the region of El Guerdane, located at the heart of the plain of Souss, has experienced significant natural and anthropogenic pressure in recent decades, leading to observable changes in the landscape of the Argan grove. However, the nature and intensity of these changes remains unclear. This study aimed to draw up an inventory of the dynamics of environmental changes between 1985 and 2017 through the diachronic exploitation of Landsat satellite images. It appears that the support vector machine (SVM) algorithm is an appropriate approach to highlight the evolution of this environment. It helped to identify not only the changes that occurred in 32 years, but also to understand that the extension of the built environment and modern takes place at the expense of the argan tree stands. Thus, the loss of about 40.60% of the Argan forest area in this region during this period has negative impacts on biodiversity, the environment, the economy, and cultural and regional history; therefore, a quick and effective intervention could be a positive action for the sustainable development of this unique forest area

15:00 ***A hybrid tool to combine multi-criterion decision making and economic objective optimization in designing grid connected hybrid energy systems***

Koubaa Zainab (Tunisie & ISGIS, Tunisia); Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia); Ahmed Frikha (Université de Sfax (ISGI), Tunisia & Institut Supérieur de Gestion Industrielle de Sfax, Tunisia)

Currently, the Tunisian energy system relies almost exclusively on fossil resources, but a new paradigm is emerging in the country. With the prevailing power crisis, unreliable and power rationing, the government has become very invested in introducing renewable energy sources into the current power mix as a sustainable means of electrification across the country. The Tunisian program on renewable energy and energy efficiency established the ambitious goal of deriving 30% of electricity production from renewable energy sources (RES) by 2030. However, REs have an inherent stochastic nature, which is their main drawback. To overcome these issues, hybridising renewable energy resources has recently gained attention due to the intermittent nature of some resources. This study addresses the sustainability objectives using a methodology based on concepts of Fuzzy Multi-Criteria Decision-Making (FMCDM) and Mathematical Optimization Programming (MOP) to design a grid connected hybrid renewable energy system. In the first phase, we calculate the criteria weights using Fuzzy AHP based on energy expert opinions. Then, we determine the evaluation of various renewable energy sources through the application of Fuzzy VIKOR method. In the second phase, we solve the design of hybrid renewable energy system using the MOP model conformed with multi-criteria decision making (MCDM) results. To verify the effectiveness, the framework is applied in Tunisia. The results show that the selected hybrid renewable energy system does not only guarantee a reliable system configuration, it also has economic, environmental and social benefits.

15:20 ***Application of Optimal Stopping Theory to Pandemic Lockdown Policies***

Noura El Hassan (Neoma Business School, Lebanon); Bacel Maddah (American University of Beirut, Lebanon); Fouad Ben Abdelaziz (NEOMA Business School, France)

During the COVID-19 pandemic, governments are facing challenges in determining the optimal time to exit the lockdown in their countries. A trade-off between health-related aspects and economic aspects should be achieved. This paper uses a discrete-time Markov Chain (DTMC) SIS model to find the optimal time to stop the lockdown. Two models are proposed: Model 1 assumes that the reproduction number R is constant with time, while Model 2 considers that R is time-dependent. The analysis of Model 1 leads to simple optimal policies.

PS4-1: PS4-1

Chair: Wachira Ponboon (Mae Fah Luang University, Thailand)

14:00 ***Making It Simple? Training Deep Learning Models Toward Simplicity***

Marco Repetto (University of Milan-Bicocca, Italy); Davide La Torre (SKEMA Business School, France)

Deep Learning aims to achieve high performances at the expense of explainability. Explainable Artificial Intelligence consists of all the methods addressing this problem. These methods do not provide interpretability from the start and are valid only as a sanity check after model training. Furthermore, it's unclear when an explanation qualifies as understandable. This paper aims at creating a double backpropagation technique restricting the model's feature effects. The approach ensures interpretable Deep Learning models' explanations during the learning phase. The problem is framed as a Multicriteria one allowing the stakeholders to control the degree of regularization. The result is a Deep Learning model that embodies simple interpretability from the start and aligns with the recent regulations. A series of numerical examples show that our method produces performant yet flexible models that can generalize even when data is scarce.

14:20 ***Federated Multicriteria Learning: A Goal Programming Perspective***

Marco Repetto (University of Milan-Bicocca, Italy); Davide La Torre (SKEMA Business School, France)

Edge computing is increasing in usage both in consumer and industrial applications. However, in many of those applications, the data residing in those devices cannot be shared freely across nodes as it will not comply with recent privacy protection regulations. Federated Learning is a framework addressing this problem. It consists of learning from a decentralized corpus of non-independent and identically distributed data. However, the problem of some recent Federated Learning approaches is that by sharing the gradient, they fail to comply with privacy protection regulations either. A solution to this problem would be to see all the models selected by each node as an ensemble. In this paper, we propose a Goal Programming approach to address this issue.

In particular, we define the federated model as a parallel ensemble in which the weights belong to the solution of a Weighted Goal Programming problem. The proposed approach has the advantage of being model and metric agnostic. Moreover, the proposed approach has the advantage of being privacy compliant, as the nodes receive only the final prediction functions. To test the performance of our approach, we employ a novel dataset, specifically for Federated Learning, the ``Federated Extended MNIST''. From the numerical experiment, it emerges that the federated Convolutional Neural Network performs much better than the Residual Network given the same training periods. Last, the Convolutional Neural Network architecture generalizes more on the edge nodes as the training increase slightly.

14:40 ***Machine learning based integrity decision management of pipeline corrosion clusters***

Abraham Mensah and Srinivas Sriramula (University of Aberdeen, United Kingdom (Great Britain))

Pipeline interacting corrosion defects usually occur in a cluster in such a way that the failure pressure is not controlled by a single defect. These metal loss defects can impair the service life of the pipeline that could lead to loss of containments and potential harm to the environment and facilities. Therefore, pipeline operators use deterministic and probabilistic integrity assessment to examine these corrosion defects to plan inspection, undertake repairs, or replacement of pipeline sections to prevent such incidents. However, the large amount of interacting metal loss defects captured by in-line inspection tools are generally assessed by conservative physics-based formulations, which are mostly centered on the single defect approach to determine the collapse pressures. The need to accurately predict the failure pressure of the large amount of clustered corrosion defects in the pipeline requires a computationally efficient machine learning approach that can accommodate variability of the input data effectively. Hence, for this research, categorical machine learning models are trained, validated, and tested using published experimental collapse pressure of corrosion cluster with the same defect depth for a test sample. The paper presents this approach, where the predicted pipeline failure pressure of the corrosion clusters captured by real in-line inspection are assessed by generated artificial neural networks and non-linear regression models that provides a total mean deviation percent of 2.52% and 9.36% respectively, better than the 17.45% error percent by Det Norkse Veritas approach. This leads to effective decisions by pipeline operators, in reducing pipeline operating and maintenance costs safely.

15:00 ***Towards predicting the decision-maker preferences - MLP-COMET approach***

Bartłomiej Kizielewicz (West Pomeranian University of Technology, Szczecin, Poland)

This paper presents a new approach to defining a COMET model based on evaluations of alternatives. In decisions problems based on expert knowledge, defined models are often unavailable, and evaluating subsequent decision alternatives becomes impossible. The approaches based on stochastic methods used so far can only serve as search functions for the closest possible model definitions. Therefore, the following work proposes a multilayer perceptron for the regression problem as an expert function for the COMET method. The study considers the selection of hyperparameters for the multilayer perceptron structure using the GridSearchCV algorithm. Then, using the obtained results, a new model was defined and compared by statistical measures with the reference model. The high similarity of the obtained model with the reference model indicates this approach as adequate for model definition.

15:20 ***Implementation of ML algorithms based Decision Aid for Smart Grid***

Soufiane El moumni (Hassan II University, Morocco); Abdelhakim Alali (Hassan II University Of Casablanca, Morocco); Mohamed Fettach (Hassan II University, Morocco)

Artificial intelligence (AI), or more precisely "machine learning", gives meaning and value to the immense amounts of data generated, collected and stored by existing measurement devices on electrical networks. Always drawing from the information of current, voltage and power signals, AI is used, for example, to identify different network operating scenarios, to understand usage patterns and load profiles, or to predict potential network operating limit overloads. In order to ensure smart energy management, load signatures provided by appliances can be used to detect which appliance is used. In this paper, we aim to implement five ML algorithms using a low-frequency database to identify appliances. The Discrete Wavelet Transform is also used for features extraction and data dimensionality reduction. The results of these implementations allow fair comparison and decision-making of the best ML algorithm in terms of accuracy to be used effectively in load signatures recognition for smart grid.

PS4-2: PS4-2

Chair: Proychai Klakayan (Mae Fah Luang University, Thailand)

14:00 ***Towards Smart Grids: Fault Detection and Diagnosis-based Artificial Intelligence Techniques in Solar PV plants***

Mohammed ali Jallal (Cadi Ayyad University Faculty of Sciences Semlalia, Morocco); Abdessalam EL yassini (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco); Samira Chabaa (Ibn Zohr & ENSA, Morocco); Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

Solar photovoltaic (PV) power plants' reliability and efficiency are always hot topics. During the operating period as all industrial systems, these plants are susceptible to malfunctions and failures in their equipment or operations. Faults occurrence in solar PV systems' components can significantly impact the efficiency, power generation yield, safety, and stability of the entire PV power plant if not detected and corrected promptly. Furthermore, if any faults persist, they can increase the fire hazard. For these reasons, incorporating a smart diagnostic system is required, where its primary goal is to provide accurate indicators for detecting faults and thus maintain the stability of the solar PV power plants' energy production. Given the importance of this topic, the present literature starts with a description of various faults mechanisms that occur in solar PV power plants before providing a consistent review about fault detection and diagnosis strategies-based artificial intelligence to boost the progress and the transition towards smart grids-based green energies.

14:20 ***Vehicle Location Privacy Protection Mechanism Based on Location and Velocity***

Izdihar S Shaleesh (Tartous University & Syrian Computer Society, Syria); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Akram A. Almohammedi (South Ural State University, Malaysia); Naji Mohammad (Tartous University, United Kingdom (Great Britain))

Vehicular ad hoc networks (VANETs) are necessary to protect the lives of drivers by providing them with important information about the condition of the road. However, this type of network is vulnerable to eavesdropping due to the wireless medium of the spread of Beacons messages, which makes drivers worry about the possibility of being pursued through the network. Thus, protecting the privacy of vehicles is an urgent matter in VANETS environments. In this paper, a privacy protection system based on changing pseudonyms depending on the speed of the vehicle and its location inside or outside the predefined mix-zones is proposed. The simulation results show that the proposed strategy is an effective strategy to protect the location information of vehicle drivers. The proposed strategy outperforms existing strategies in terms of mean number tracker confusion, continuous tracking period, and maximum entropy.

14:40 ***An overview of Automatic Speech Recognition Preprocessing Techniques***

Maria Labied (University Hassan II Casablanca, Morocco); Abdessamad Belangour (Hassan II University, Morocco); Mouad Banane (University of Hassan II, Morocco); Allae Erraissi (Chouaib Doukkali University, El Jadida, Morocco)

Speech signal preprocessing is the first and the most important step in the automatic speech recognition process. The preprocessing of speech consists of cleaning the speech signal from ambient and undesirable noises, detecting speech activity, and normalizing the length of the vocal tract. The objective of preprocessing a speech signal is to make the speech recognition systems computationally more efficient through the application of several preprocessing techniques, such as speech pre-emphasis, vocal tract length normalization, voice activity detection, noise removal, framing, and windowing. This paper gives an overview of the fundamentals of speech signal preprocessing techniques, by highlighting the specifics and the requirements of each technique. We also explore all aspects that can improve the results of each technique. We aim that the content of this paper will help researchers improve the quality of their speech recognition systems by identifying appropriate speech preprocessing techniques to use in their experimental settings.

15:00 ***An Advanced Weighted Evidence Combination Method for Multisensor Data Fusion in IoT***

Nour el imane Hamda (Blida1 University, Algeria); Allel Hadjali (LIAS, ENSMA, France); Mohand Lagha (Blida1 University, Aeronautical Science Laboratory & Institute of Aeronautics and Spatial Studies, Algeria)

Dempster-Shafer theory is an essential tool for modelling and reasoning under uncertainty, and it is an effective approach for multisensor data fusion. It is extensively deployed in many fields such as fault diagnosis, image processing, pattern recognition,

etc. However, Dempster's combination rule is often subject to counter-intuitive results when the sources highly conflict; several methods have been proposed in the literature to solve this problem. In this paper, a weighted evidence combination method based on evidence distance, evidence angle, and information volume is proposed to overcome the shortcomings of the classical Dempster's combination rule. To investigate the effectiveness and performance of the proposed method, a comparative study with different state of the art methods using both benchmark numerical example and Fault diagnosis application has been carried out.

PS4-7: PS4-7

Chair: Suppakarn Chansareewittaya (Mae Fah Luang University, Thailand)

14:00 ***Electric Vehicle Charging Stations and their Impact on the Power Quality of Utility Grid***

Surbhi Pankaj (Aligarh Muslim University, India); Mohd Rizwan Khalid (ALIGARH, India)

Electric Vehicles (EVs) are like any other Internal Combustion (IC) engine vehicle running on the road, but unlike IC engine vehicles they are the main concern for electrical engineers because of their integration with the grid. The environmental benefits of EVs motivate more consumers to adopt EVs which leads to a major rise in the demand for EVs. To meet the rising demand there is a need for considerable EV charging stations. These EV charging stations when connected to the grid, inject harmonic, disturb the voltage and ultimately hamper the power quality (PQ) of the utility. In this paper, the impact of EV charging stations on the PQ of the utility grids is analyzed. The concerns like voltage sag and swell, harmonics, and power demand are observed and a mitigation technique is provided for improving the PQ of the utility.

14:20 ***Edible Packaging Selection Employing Hybrid CRITIC and TOPSIS Method***

Kavitha Reddy Gurrala, Maram Helmy and Malick Ndiaye (American University of Sharjah, United Arab Emirates)

Nations are under constant pressure to reduce the increasing amounts of food packaging waste generated across the world, as the demand and supply patterns for food across the world are expected to tremendously rise with the increasing population levels across the globe. However, the research focus in the domain of food packaging mainly concentrates on the usage of advanced technologies or implementation of atmospheric controls within the packaging, to protect food and prolong the shelf life of the foods to facilitate environmental impact reductions through food waste reductions, with little focus on the development of alternatives such as edible films, that can further facilitate significant reductions within the environmental pollution levels generated from food packaging wastes. Additionally, research concentrating on edible films resulted in the formulation of several biocomposites developed from alternative biopolymers i.e., polysaccharides (glucose derivatives), proteins (animal or vegetable derivatives), etc., exhibiting significant differences corresponding to physical, mechanical, optical, thermal, chemical, and barrier properties, necessitating the application of Multi-Criteria Decision-Making Methods (MCDM) towards the selection of an optimal biocomposite for edible film preparation. Therefore, this study aims at employing a Hybrid MCDM method formulated from CRITIC (Criteria Importance Through Inter- Criteria Correlation) and TOPSIS (Technique by Order Preference by Similarity to Ideal Solution) methods, to facilitate the selection of an optimal green biocomposite sample from a set of film samples exhibiting different properties.

14:40 ***A Review on Power Pad, Topologies and Standards of Wireless Charging of Electric Vehicles***

Bilal Alam (Aligarh Muslim University, India); Aqueel Ahmad (Aligarh Muslim University & Zakir Hussain College of Engineering and Technology, India); Yasser Rafat (Aligarh Muslim University, India); Mohammad Saad Alam (Aligrah Muslim University, India)

The charging mechanism of an electric vehicle functions an important role in the structure of EV. The conventional EVs employ plug-in charging systems while the modern EVs employ either wireless charging systems or a hybrid combination of wired and wireless charging. This paperwork presents a state-of-the-art review of different methods incorporated to transfer power through an air gap (WPT). The wireless charging methodologies and the type of charging system based on the vehicle position while getting charged have been detailed. The components required for WPT followed by different topologies have also been discussed. The detailed enhancement of the topics has been done using diagrams and figures to provide an image of the idea of

the topics being discussed. The requirement, standards, recent trends, challenges for WPT are discussed. Comparative analysis of the characteristics of various compensation topologies has been outlined in tabular form. Through the paper researchers, scholars could grab thorough knowledge on the basics of WPT and its mechanism of working, especially its explicit usage in EVs.

15:00 ***Purchase Decision and Consumer Behaviour for Organic Products***

Monika Chinchkhede and Sandeep Prabhu (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

Purpose - This paper aims to acquire information about nature of customers & customer willingness to buy organic products. The purpose of this study report is to identify the reasons behind the attitude of the customer on these products. A face-to-face interview was conducted to gather data, which included a closed-ended questions with a structured questionnaire. Summation of 150 people participated in the poll. Conclusion of the study were analyzed using factor analysis in SPSS. Consumers regard organically cultivated goods as high quality and highly healthy, according to the findings. Such items are seen as problematic appearance and costly. Customers aren't very familiar with the market's supply of organically farmed products. Some customers prefer organic products and they are ready to pay a high price for these products. As a result, natural product marketing tactics should target these individuals. Practical implications - According to the findings of the study, one of the most significant tasks for producers is to raise customer awareness of organic product and how to distinguish it in the market. They might stress organic items' health advantages, natural components, and high quality. Value - The findings of this study might be utilized to plan future marketing operations, since they give important understanding behaviour about these products. And learning the elements which influence them for purchasing these products. Keywords- Ecological awareness, Purchaser behaviour, Purchaser satisfaction, Chemical free products, buying behaviour, natural, healthy

15:20 ***Optimizing ergonomic in manual assembly line balancing problem***

Zainab Tkitek and Hager Triki (Higher Institute of Industrual Management of Sfax, Tunisia)

Nowadays, ergonomics is an important consideration when dealing with manual assembly line balancing problems because of the effects it can have on both productivity and human factor issues. In this case, the human factor has become an essential decision-making component within the company. The design of an assembly line can optimize ergonomic aspects based on the anthropometric and physiological characteristics of the workers. Assembly line balancing (ALB) allocates individual tasks to work stations while respecting the physical, safety and quality constraints. The fundamental ALB problem is the way of getting an optimal assignment of tasks to the stations respecting well-determined constraints and reaching certain objectives. This problem is often an active research area. In this paper, a new manual ALBP model is proposed. The contribution of this paper is based on the assignment of assembly tasks to workstations while taking into account a set of human operators that are actually available in a firm. Workers are assigned based on anthropometric and physiological characteristics such as arm measurement The arm spam measurement will be considered in the proposed model like the length of the workstation for the operator executes the work task comfortably. The objective of the problem is the minimization of the number of workstations to reduce the length of the novel line designed. An illustrated example randomly generated is finally tested with LINGO software and discussed.

PS4-8: PS4-8

Chair: Pornpimol Chaisanit Chaisanit (Mae Fah Luang University, Thailand)

14:00 ***Implementation of Education 4.0 as Sustainable Decisions for a Sustainable Development***

Yulia Samiha and Tutut Handayani (Universitas Islam Negeri Raden Fatah Palembang, Indonesia); Abdur Razzaq (Universitas Islam Negeri Raden Fatah, Indonesia); Mia Fithriyah (Indonesia Open University, Indonesia); Annisa Fitri (An Nashr Institute, Indonesia); Muhammad Anshari (Universiti Brunei Darussalam, Brunei Darussalam)

Excellent concept of sustainable development is an essential factor in addressing the world's rising unemployment rate. Many researchers believe that Industry 4.0 will increase unemployment besides replacing old jobs with automated machines such as robots, while others think it will decrease underemployment by creating new employment opportunities. To prepare the millennial

generation for the possible ramifications of Industry 4.0, Education 4.0 should be introduced. The purpose of this report is to examine the potential causes of youth unemployment in the age of Industry 4.0, to determine preventive measures or steps that can be taken, particularly by the educational system, to reduce the unemployment rate. According to root cause analysis (RCA), the problem might be caused by the lack of understanding of the keys of Education 4.0.

14:20 ***Post Covid-19 Strategy Through Supporting Teacher Digital Literacy as the Sustainable Decision to Enhance Education System: Indonesia Case Study***

Indah Wigati (Universitas Islam Negeri Raden Fatah, Indonesia); Mia Fithriyah (Indonesia Open University, Indonesia)

Digital literacy has become a major concern for the world of education including students, teachers, and policy makers. Awareness of mastery of digital literacy is very necessary for educators in the learning process. This study aims to analyze the awareness of the use of teacher digital literacy in the learning process after the Covid-19 pandemic. This study employs a quantitative descriptive method to describe the form of teacher digital literacy awareness, supporting factors in the use of digital literacy and the implications of awareness of using digital literacy teachers after the Covid 19 pandemic. This research was conducted at Islamic Public Senior High School (MAN) in Palembang City, South Sumatra. The results showed the form of mastery of digital literacy of teachers was high in the ability to utilize technology (100%). The most influential supporting factor correctly is the motivation of friends (97.90%). The implication of using digital literacy for teachers is the execution of virtual meeting learning (94%). The logical conclusion of this study is that teachers develop awareness in utilizing technology, and it is more effortless to convey material after the Covid-19 pandemic. Mastery of digital literacy for teachers needs to be carefully reviewed to the stage of performance and application to students.

14:40 ***Assessing Temporal-based Parking Pricing Schemes***

Elmer R Magsino, Gerald P. Arada and Catherine Manuela Lee Ramos (De La Salle University, Philippines)

As more vehicles roam the urban roads, the necessity of availing a parking space to park the vehicle during down time becomes imminent. However, due to the heterogeneity of these parking locations, different commercial establishments collect varying car park fees from their customers. As parkers, they search for available lots that provide value for their money. In this study, we evaluate two existing temporal-based parking pricing schemes, namely, Fixed and Linear Rate Pricing, based on their effective value. We introduce a new pricing scheme, Min-Max Rate Pricing, to provide balance between the low and high effective values of the Fixed and Linear Rate, respectively. Our investigation shows that for shorter parking duration, the rates of all schemes are approximately equal, while for longer duration, Linear Rate is the most expensive of all schemes and the proposed Min-Max Pricing rate provides an intermediate price value for parkers.

15:00 ***The Role of Community Managers in Digitizing Small Businesses***

Shahrul Azmi Mohd Yusof, Nor Idayu Mahat and Jauriyah Shamsuddin (Universiti Utara Malaysia, Malaysia); Roshidi Din (Universiti Utara Malaysia & School of Computing, Malaysia); Ayoib Che-Ahmad (Universiti Utara Malaysia, Malaysia)

Asnaf is a person that is eligible to receive zakat, a form of almsgiving collected from Muslims. Asnaf i-Care is a business and income management website designed to help qualified Asnafs who are computer-illiterate do online business. It uses the idea of a community manager to help asnaf merchants conduct online business by marketing their products online. This idea was introduced to assist in digitizing merchants' conventional business. The Community Manager takes care of the overall e-commerce website management and manages marketing through social media and orders. The overall design of Asnaf I-Care includes Phase 1, developing an e-commerce system for Asnaf products; Phase 2, monitoring the income of Asnaf entrepreneurs; and Phase 3, distributing Asnaf goods. In addition, this paper covers phase 1, the purchasing system. Feedback was compiled from 37 asnaf merchants operating small and micro enterprises and 43 university students. The questionnaire was divided into four parts: merchants' readiness to transition to e-commerce business with community managers, acceptance of the concept of Asnaf i-Care and community managers, pricing in Asnaf i-Care application, and merchants' suggestions and comments to improve Asnaf i-Care application. Overall, almost all Asnaf merchants agree with community managers' concept of helping them implement their online businesses. However, the percentage of agreement is slightly lower among students than among merchants. In conclusion, Asnaf dealers can adopt the concept of community business well with the help of community managers, especially those whose business is negatively affected by the situation COVID -19.

15:20 ***Machine Learning Based Model To Assess the Impact of Rapid Urbanization on Land Surface Temperature***

Tasneem Ahmed (Integral University Lucknow, India); Saurabh Srivastava (Integral University, India)

Satellite images are a powerful tool for earth surface monitoring and are freely available for interpretation and analysis of earth surface monitoring like Landsat series and Sentinel 2. The earth observation techniques are frequently used in various areas of earth surface monitoring including urban planning, vegetation monitoring, administration in charge of territorial planning, etc. The advancement in satellite imaginary techniques offers a promising framework for monitoring land changes in urban areas. The urban heat is responsible for higher temperature values of urban areas as compared to their surroundings. The land surface temperature is an important parameter for many scientific areas, it affects the relationship between the land surface and the atmosphere. In this study, the last five years' Sentinel 2 and Landsat 8 images of the summer season have been used to monitor the urban area and land surface temperature to establish the correlation between urban area and land surface temperature for finding the impact of rapid urbanization at land surface temperature. In future, urban area monitoring will be helpful to the decision makers for preparing the urban area plan and resource management

Thursday, March 24 15:40 - 16:00 (Asia/Bangkok)

Break: Coffee Break

Thursday, March 24 16:00 - 16:30 (Asia/Bangkok)

INFORMS BH: INFORMS BH

Chair: Hatem Masri (University of Bahrain & University of Sousse, Bahrain)

Thursday, March 24 16:30 - 17:15 (Asia/Bangkok)

SP2-1: Semi-Plenary 2-1

Chair: Abdulla Alqaddoumi (University of Bahrain, Bahrain)

How machine learning can help metaheuristics?

SP2-2: Semi-Plenary 2-2

Chair: Sawsan Hilal (University of Bahrain, Bahrain)

Deep Learning and Multiple Criteria Optimization: New Results and Applications

Friday, March 25 8:00 - 8:30 (Asia/Bangkok)

ATK+REG: ATK Testing and Registration

Friday, March 25 8:30 - 10:10 (Asia/Bangkok)

PS5-1: PS5-1

Chair: Nacha Chondamrongkul (Mae Fah Luang University, Thailand)

8:30 ***A Comparative Study of Machine Learning Algorithms for Predicting Weight Range of Neonate***

Saleem Adeeba and Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Senthan Prasanth (Physical Sciences and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Sri Lanka)

Birth weight is a crucial measure of pregnancy outcome, and it indicates a neonate's chances of longevity, growth, long-lived health, and mental development. In epidemiological studies, it is commonly regarded as the causative pathway to these health consequences. Scanning the fetus's weight before birth is associated with difficulties and is typically calculated using empirical calculations based on doctors' clinical experience. In this research, the authors proposed an approach to predict the neonate weight class with minimum errors and costs during six months of pregnancy, utilizing existing pregnant women's data. Authors recognized 16 attributes after an extreme literature survey and expert opinions. The hemoglobin level of the mother, mother's pre-pregnancy weight and height, pregnant woman's weight each month until 6 are some attributes identified. For the Machine learning (ML) models to work, a dataset of 1000 pregnant women was obtained and preprocessed. Then dataset was prepared to apply ML models. This research uses eight different ML algorithms to predict the neonate weight class at six months of pregnancy. Also, this research provides an approach to compare different eight ML models to find an effective algorithm for the neonate weight prediction. The Linear Discriminant Analysis (LDA) model has higher performance than other models. Accuracy, precision, recall and F1-score for LDA are 81.94 %, 83.05%, 94.23% and 88.28 % respectively.

8:50 ***Dry and Wet Cough Detection using Fusion of Cepstral base Statistical Features***

Shweta Pande, Anup Patil and Sharmila Petkar (University of Mumbai, India)

Nowadays with technological advancements, machine learning is widely used in the healthcare sector to help patients and doctors. Machine learning offers various tools for healthcare to diagnose various diseases in an effective manner. In clinical diagnosis, machine learning is used to analyse the audio recording of coughs in order to detect respiratory illness. To clear lung and throat from any foreign substance, the human body's inundate mechanism create a substance called Cough. Audio recordings of coughs consist of patterns and depending on the pattern, cough can be classified as wet cough and dry cough. The COUGHVID dataset consists of more than 20,000 audio recordings of cough which includes a wide range of subjects such as gender, ages, geographic locations, from which more than 2000 recordings are labelled by medical experts to diagnose abnormalities present in cough. In this paper, a fusion of different cepstral based statistical features and classification using machine learning algorithms is presented. After analysis, it is observed that through ADASYN oversampling highest accuracy of 85.84%, f1 score of 86.80% and the area under the curve as 0.857 is achieved for the MLP model.

9:10 ***Students' health problems and behavior in online learning decision during COVID-19 epidemic***

Pitchakorn Khumya, Sakunrat Phadungpak, Rungtiwa Khanbut, Waritsara Rattanasattakul and Tosporn Arreeras (Mae Fah Luang University, Thailand)

Online learning plays an increasingly important role in education. At the same time, the COVID-19 pandemic made institutions shift classroom learning to online learning. Online learning causes various problems that affect students' physical and mental health problems. They needed to be confined indoors and sitting in front of electronic devices resulting in stress, depression, or fatigue. Certainly, COVID-19 was a considerable threat to students' health, so it caused students to suffer significant physical and mental health problems. Therefore, this research aims to study the impact of the study during the outbreak and examine

the impact of physical and mental health problems. This research was designed as quantitative data collected using online questionnaires from 450 students aged 15-26 using exploratory factor analysis were conducted to identify factors for the impact of health problems during online learning among Thai students during COVID-19. It also helps to improve student learning efficiency and for the benefit of teachers in adapting teaching and learning to the situation and avoiding potential future health risks.

9:30 ***Chemical Named Entity Recognition for Ovarian Cancer's Drug Discovery***

Vijayshri Nitin Khedkar (Symbiosis Institute of Technology, Symbiosis International, Lavale, Pune, India); Sonali Kothari (Symbiosis International Deemed University, India); Mansi R, Devshi Desai and Charlotte Fernandes (Symbiosis Institute of Technology, India)

Biomedical text mining, which is utilized for extracting valued information from biomedical papers, named entity recognition is a critical task. Drug NER is a crucial step in advanced biomedical NLP applications including pharmacodynamics, pharmacokinetics, and pharmacogenomics parameter abstraction. The number of scientific papers is continually increasing, allowing to expand understanding of health, clinical, and biological sciences. Because the acquired findings are not currently archived automatically, most of this information is concealed in the textual contents, making it unreachable for later use or study. Because the amount of time and effort necessary to extract critical information from such a large number of articles is so great, no pre-existing dataset devoted specifically to ovarian cancer has been discovered. As a result, the proposed research created a dataset from scratch to train the suggested model. Proposed research discussed method to drug development in Ovarian cancer using Chemical Named Entity Recognition in this publication. Results: BiLSTM which stands for Bi-directional long short-term memory along with CRF, proposed research present a Named Entity Recognition system for chemical entities. On the basis of the dataset proposed research created, the proposed research evaluates the model. For CNER, the model achieved an F1-score of 0.91 on this dataset. Proposed research finds that the technique performs admirably for biomedical NER problems. Conclusion: The suggested method is effective in recognizing chemical entities in ovarian cancer-related literature..

9:50 ***Early Stroke Prediction Using Machine Learning***

Chetan Sharma (Chitkara University Himachal Pradesh, India); Shamneesh Sharma (UpGrad Education Pvt Ltd, India & UpGrad Campus, India); Mukesh Kumar (Lovely Professional University, India); Ankur Sodhi (upGrad Education Private Limited, India)

Stroke is one of the most severe diseases globally, and it is directly or indirectly responsible for a considerable number of deaths. A variety of data mining techniques are employed in the health care industry to aid in diagnosing and early detection of illnesses. Several elements that lead to stroke are considered in the current investigation. First, we're looking into the characteristics of those who are more likely to suffer from a stroke than others. The dataset is obtained from a freely available source, and multiple classification algorithms are used to predict the occurrence of a stroke shortly. By employing the random forest algorithm, it has been possible to obtain an accuracy of 98.94 percent. Finally, various preventative steps such as quitting smoking, avoiding alcohol, and other factors are recommended to reduce the risk of having a stroke.

PS5-5: PS5-5

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

8:30 ***ProdRev: A DNN framework for empowering customers using generative pre-trained transformers***

Aakash Gupta (& Think Evolve Consultancy LLP, India); Nataraj Das (NIT Agartala, India)

Following the pandemic, customers, preference for using e-commerce has accelerated. Since much information is available in multiple reviews (sometimes running in thousands) for a single product, it can create decision paralysis for the buyer. This scenario disempowers the consumer, who cannot be expected to go over so many reviews since its time consuming and can confuse them. Various commercial tools are available, that use a scoring mechanism to arrive at an adjusted score. It can alert the user to potential review manipulations. This paper proposes a framework that fine-tunes a generative pre-trained transformer to understand these reviews better. Furthermore, using "common-sense" to make better decisions. These models have more than 13 billion parameters. To fine-tune the model for our requirement, we use the curie engine from GPT3. By using generative

models, we are introducing abstractive summarization. Instead of using a simple extractive method of summarizing the reviews. This brings out the true relationship between the reviews and not simply copy-paste. This introduces an element of "common sense" for the user and helps them to quickly make the right decisions. The user is provided the pros and cons of the processed reviews. Thus the user/customer can take their own decisions.

8:50 ***Role of ICT & Fintech in Indian Agriculture***

Ameya More (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

In emerging economies and rural areas, weak technological infrastructure, high costs of technology, low levels of e-literacy and digital skills, weak regulatory framework and limited access to services are the primary challenges in the digitalization process of Agriculture. As a result, the usage of Internet of Things (IoT), data analytics (DA) and Fintech are employed to enhance the operational efficiency and productivity within the agriculture sector. The IoT existing technologies integrate radio frequency identification, cloud computing, middleware systems, and end-consumer applications for future developments. Big data, IOT and Fintech are important technologies used for good sized statistics and assist agricultural practitioners to recognize well farming practices and take specific decisions. The important aim is to focus on Fintech and IoT in agriculture which features records of creation strategies, accessibility of era, accessibility of gadgets and software gear. As there are many farmers who witness demanding situations to get access to the marketplace, credit, quality farm inputs to improve their crop yield. So, the access to digital technology provides significant benefits to smallholder farmers and different rural businesses to tap into workforce talent, build strategic partnership, access support services which include training, finance and legal services and, critically, reach markets and customers.

9:10 ***Literature Review: Blockchain-Oriented Software Characteristics and New Stream for Software Process Improvement***

Ammar AL-Ashmori (Universiti Teknologi PETRONAS & Yemen, Malaysia); Dhanapal Durai Dominic (Universiti Teknologi PETRONAS, Malaysia); Shuib Basri (Universiti Teknologi Petronas, Malaysia); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Gehad Mohammed Ahmed Naji (Universiti Teknologi PETRONAS (UTP), Malaysia)

Software process improvement has been through many discussions in the past few decades with relation to the software development changes. Blockchain-oriented software has been getting more popular, and many recent researchers discussed the suitability of traditional software engineering for this new type of software. However, the suitability of the current SPI for blockchain-oriented software has not been discussed yet. This paper aims to define the Blockchain-oriented Software characteristics that differentiate it from the traditional software. A literature search was performed considering the studies published up to the date on IEEE Explore, Springer, ACM, ScienceDirect, ProQuest, Web of Science, and emerald insight. A total of 103 studies were found, and only 49 relevant studies met the inclusion criteria. A thematic analysis was performed with an inductive approach to identify 46 distinctive Blockchain-oriented Software characteristics. This result shows the necessity for researchers to devise specific SPI to develop blockchain-oriented software to address its distinctive characteristics, which affect its development and projects. Finally, a new stream for SPI is recommended here to cover Blockchain-oriented Software Process Improvement.

9:30 ***ShielDroid: A Hybrid Approach Integrating Machine and Deep Learning for Android Malware Detection***

Md Faisal Ahmed, Zarin Tasnim Biash, Abu Raihan Shakil, Ahmed Ryen, Arman Hossain, Faisal Bin Ashraf and Muhammad Iqbal Hossain (Brac University, Bangladesh)

Due to the rapid development of the advanced world of technology, there is a high increase in devices such as smartphones and tablets, which increase the number of applications used. Though an application has to pass the malware detection test before appearing in the play store, many applications successfully get trusted and accepted even though they contain malicious software variants that are challenging to detect. The application requires physical execution to see these malicious contents, which get undetected during the first screening test. Due to the physical implementation of the application, it may be too late to undo the malware's damage. In this work, the usage of real-time Android malware detection analyzing Android applications to detect and swiftly distinguish complex malware has been discussed. This work focuses on the use of dynamic algorithms

implemented by hybrid detection techniques of Android malware. After filtrating the collected dataset, the process of separation between harmful and benign apps is discussed. Then summarization and evaluation of the various techniques and classification algorithms employed have been discussed, identifying the best-suited method that gives the most accurate result in a minimum amount of time. The best way to reach the target is a hybrid Random Forest, and Multilayer perceptron network, where the overall accuracy achieved was 97.5% with an execution time of 22.945 seconds. The application of this work may allow the users to protect their devices from cyber-attacks by detecting malicious software variants in mobile applications

9:50 ***Extreme Event Detection and Management using Twitter Data Analysis***

Girish K K (Providence College of Engineering, Chengannur, India); Jeni Moni (Providence College of Engineering Chengannur, India); Joel Roy, Afreed P, S Harikrishnan and Gokul Kumar (Providence College of Engineering, Chengannur, India)

Events like the natural disasters are impossible to predict and are inevitable. The best course of action in that scenario is to effectively detect the event and respond to it accordingly. With quick detection and tangible information retrieval, casualties can be greatly reduced. Traditionally, this has been a tiring task as the data was siphoned from human observers or expensive equipment. In countries with scarce economies, the acquisition of these equipment can prove herculean and relying on individual human observers may lead to the spread of misinformation. An inexpensive and reliable solution to this problem can be found in the form of a system which facilitates the detection of extreme real-world events through the reactions of people on online social networks like Twitter. Unusual bursts in traffic from Twitter can be detected and this can be associated with an event. Moreover, the system can monitor the Twittersphere for rescue requests that appear on Twitter at the aftermath of an extreme event. Thanks to the containerized designed and hence its scalability, this model can undergo worldwide deployment with ease.

PS5-4: PS5-4

Chair: Karthik Sekaran (Saveetha Engineering College, India)

8:30 ***Effects of role ambiguity on work stress with Islamic coping as mediation among nurses during a Covid-19 pandemic at the General Hospital in Aceh-Indonesia***

Suwardi Suwardi, Said Musnadi and M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia)

The nursing work environment has changed during the Covid-19 pandemic and has impacted work stress among nurses in addition to other stressors including role ambiguity. Nurses with good stress coping can mitigate environmental stressors to minimize the work stress to the lowest level. This study aims to determine the direct effect of role ambiguity and Islamic coping on work stress and the indirect effect of role ambiguity on work stress through Islamic coping among nurses who are working at the General Hospital dr. Zainoel Abidin (Rumah Sakit Umum dr. Zainoel Abidin - RSUDZA), Banda Aceh, Indonesia. A number of 206 nurses who worked in inpatient rooms at the hospital were selected as the sample of study using a stratified random sampling method. The primary data were collected using the questionnaires in the form of a Likert scale and analyzed using a Structural Equation Modeling (SEM) approach. The study found that role ambiguity and Islamic coping have a direct positive and negative influence on work stress. In addition, role ambiguity also has an indirect effect on work stress through Islamic coping. These results have implications for reducing work stress experienced by nurses during the Covid-19 pandemic through the clarification of the roles and responsibilities and improvement of Islamic coping skills of nurses during the Covid-19 pandemic.

8:50 ***Managing performance through technology in times of global crisis***

Sunaina Chetan Kuknor (Symbiosis Institute of Business Management, Pune & Symbiosis International Deemed University, India); Bhuvanesh Kumar Sharma (Symbiosis International University, Pune & Symbiosis Institute of Business Management Pune India, India); Phanindra Siddamsetty (Symbiosis Institute of Business Management, Pune, India)

With the Covid-19 situation globally, the world has become more virtual than physical. Embracing this change to the benefit of organizations is the need of the hour. The present paper examines how the human resources function has transformed during the pandemic, specifically relating to the Performance Management Systems (PMS). The study conducted by interviewing 20

HR professionals from IT industry in India through semi structured questionnaire. The study results indicate that adopting human resource information system (HRIS) as an important tool for capturing and managing employee performance highlighting an organization's progressive approach to adapt to digital space. In the present pandemic situation, HRIS tool has several benefits that managers can adopt to reduce uncertainty and adopt an advanced approach for employee upliftment. Based on the results, managerial and theoretical implications are discussed in the study.

9:10 ***Interpreting the factors of Employee Attrition using Explainable AI***

Karthik Sekaran (Saveetha Engineering College, India); Shanmugam S (Anna University & Saveetha Engineering College, Chennai, India)

Employee attrition is a great challenge for every organization. The growth of any organization directly depends on talented employees. Each employee is considered as a resource, trained over years on crucial skills, builds dependency over critical positions in an organization. There exists several reasons behind the decision made by the employee. It is the responsibility of the organization to identify the attrition of employees as it creates many implications for the processes. Retention of the employee, in turn, reduces the burden of hiring new candidates, increases stability, reduces wasting time on training, etc. To address this key challenge, a sophisticated interpretation model is employed to trace out the reason for attrition. This paper demonstrates the efficacy of two powerful Explainable AI (XAI) models named Local Interpretable Model-Agnostic Explainer (LIME) and Shapley Additive Explainer (SHAP) on interpreting the factors deciding employee attrition. These models unveiled logical insights from the data that could assist the management authorities in countermeasure the risk of employee attrition.

9:30 ***Impact of Human Resource Practices on Individual and Organization Growth***

Chetan Sharma (Chitkara University Himachal Pradesh, India); Shoeb Ahmad (Fahad Bin Sultan University, KSA, Saudi Arabia); Sandeep Singh (Shoolini University, India)

The current decade is transferring an organization's approach towards globalization, and this approach is escalating the competition spirits among them. Human resource management is becoming more critical and complex these days due to the competitive nature of organizations. Organizational growth is not contingent on the policies they specify in daily practice; instead, it is contingent on the personnel for which policies are created and related to human resources. Human resource is the key role player for handling all the activities like recruitment, training, rewards, etc., associated with the workforce. This study focused on finding the various practices which impact employee personal and organizational growth. This study survey is conducted using the questionnaire circulated to education sector people, and there are 280 respondents whose responses have been considered to experiment. The author concluded that human resource practices and policies influence employee performance, both directly and indirectly, through different hypotheses. Performance, rewards, and skills-like elements are investigated, and the results are presented.

9:50 ***A Decision Model For Using Gamification Technology In Employee Training***

Fatima Vapiwala (Symbiosis Institute of Business Management, Pune & Symbiosis International(Deemed University), Pune, India); Deepika Pandita (Symbiosis Institute of Business Management Pune, Symbiosis International (Deemed) University, Pune, India)

The objective of this study is to highlight the various challenges faced by the banking sector, especially after the pandemic as the pace of technological adoption majorly transformed in the training domain. This paper focuses on the revelation of the skills and capabilities required by the Indian banks in line with recent trends and addresses the need for using gamification technology to bridge the skill gap of the employees. For this study, primary data is collected using the structured interview process. 100 respondents were selected comprising of bank managers from private and public sector banks in India who have already utilized gamification technology for their employee training and development. The study has been conducted in the context of the Indian banking sector. The authors have given relevant recommendations based on the responses and findings that can aid the Indian bank managers in making a wise decision regarding the suitability of gamification technology for training their employees.

PS5-2: PS5-2

Chair: Kowit Nambunmee (Mae Fah Luang University, Thailand)

8:30 ***The use of social media by entrepreneurial and small firms: systematic literature review***

Pantas H. Silaban (University of HKBP Nommensen, Indonesia); Wen-Kuo Chen and Andri Dayarana K. Silalahi (Chaoyang University of Technology, Taiwan)

Entrepreneurs and small business owners are converting their services into the current era of social media development to keep up with changes in modern styles by using social media as the primary channel for marketing, sales, and advertising. Entrepreneurs and small businesses must also be able to adapt and gain a competitive edge in today's highly competitive business environment. The purpose of this study is to review the literature on the use of social media by entrepreneurs and small business owners in the Small and Medium-Sized Enterprises (SMEs) sector. As a result of the systematic literature review conducted through the study, entrepreneurs and small businesses will gain a competitive advantage by using social media effectively. Entrepreneurs with a high level of self-efficacy are likely to use social media effectively. As a result of this study, we found that increasing company value, supporting social entrepreneurship, and implementing social change programs are all effective ways to promote corporate social responsibility.

8:50 ***Competitive Landscape of IT Industry in the 5G ecosystem: A Management decision case study of Amdocs***

Anik Baidya and Giri Gundu Hallur (Symbiosis International Deemed University, India)

The upcoming 5G technology launch will have a deep impact on the IT service providers and OSS-BSS industry. The needed changes in OSS/BSS in order to support 5G services are being studied by industry consortia and researchers and new reference architectures and best practices as the IT industry gears up support 5G. Further, emerging trends of widespread adoption of Software Defined Networking/Network Function Virtualisation, Robotic Process Automation, Business intelligence (BI) and artificial intelligence (AI) and machine learning (ML) will serve as key drivers for major changes in the operations support system / business support system (OSS/BSS) architectures. The OSS/BSS domain is expected to adopt key technology innovations such as shared reference model for business process management, standardised information flow across APIs, comprehensive service management, efficient and agile network orchestration for supporting network slicing and building up to the OSS architecture in modules. Thus, the IT industry and OSS/BSS domain in particular is slated to play a key role in roll-out of 5G. The research paper highlights on the leading IT service providers comparative analysis and the decisions that management of Amdocs needs to take to compete with them and to sustain in the existing market competition.

9:10 ***Economic and Technical Implications of Implementation of OpenRAN by "RAKUTEN MOBILE"***

Ashwin U and Giri Gundu Hallur (Symbiosis International Deemed University, India)

Rakuten Mobile is a new challenger telecom operator in Japan competing with NTT DoCoMo, KDDI's au, and SoftBank. Tareq Amin, Rakuten's CTO, has marketed the company's network technology approach to the mobile industries around the world. It has focused on developing a cutting-edge new network architecture with an unusual mix of vendors. Unlike other networks, the company aims to leverage virtualization and containerization extensively throughout its network topology. Rakuten recently joined O-RAN Alliance, a telco community that promotes Open Radio Access Network. The parameters of the Open RAN includes disaggregation of RAN hardware and software on vendor-neutral, multiple architecture options- integrated RAN with disaggregation at Software and Hardware level or a split RAN with Regional Unit(RU) and Baseband Unit (BBU), solutions carried out either on Virtual machine or containerized platform, implementation of Open interface between the nodes, Open RAN compatibility with 2G,3G,4G and 5G deployments, and innovation through adaptation of technologies such as Artificial Intelligence, Machine learning or IoT. This research paper talks about how Rakuten telecommunication successfully implemented the mentioned tenets of the Open RAN technology, becoming the world's first in deploying the open, virtualized radio access network.

9:30 ***Confirmatory Factor Analysis of Enterprise Architecture for Higher Education Institutions***

Chanin Tungpantong (King Mongkut's University of Technology North Bangkok, Thailand); Prachyanun Nilsook (Faculty of Industrial Education, Thailand); Panita Wannapiroon (King Mongkut's University of Technology North Bangkok, Thailand)

This research aims to apply confirmatory factor analysis to identify the enterprise architecture components for higher education institutions. The research sample comprised 300 personnel from agencies within higher education institutions, which are higher education institutions under the Ministry of Higher Education, Science, Research and Innovation that use the database system of

educational quality assurance called Commission on Higher Education Quality Assessment online system (CHE QA Online). The selection resulted from multi-stage random sampling from 100 higher education instructions. The research tool was an online questionnaire form on factors influencing the enterprise architecture in the digital transformation for higher education institutions by 5-level rating scale based on the Likert's scale. The result revealed that the enterprise architecture factor is consistent with empirical data (p-value = 0.370), which comprise 5 components: 1) Business 2) Data/Information 3) Application 4) Infrastructure and 5) Security. The research findings help higher education institutions design their blueprint for the institutional transformation to a digital organization.

9:50 ***Using Data Analytics to Assess Factors Affecting the Survival Rate of Young Urban Trees***

Samah Senbel (Sacred Heart University, USA); Carly Seigel (Weston High School, USA); Thomas Corell (Town of Fairfield, Connecticut, USA); Mary Hogue (Town of Fairfiled, Connecticut, USA)

Urban trees play an important role in cities big and small, both for aesthetics and carbon dioxide sequestration. Therefore, many cities and towns have a community tree planting initiative. The Town of Fairfield, Connecticut, USA has been running a community tree-planting and monitoring project for 6 years. The program plants young trees in the public right-of way adjacent to private homes for a reduced fee. There is a 94% success rate for the trees planted. At the request of the town's forestry committee, we collected and cleaned the planting data as well as the annual evaluations data for over 700 trees. The cleaned dataset was analyzed for feature importance using the Python coding language. We experimented with three feature importance techniques: CORR, RF, and XGB. We showed that the following factors had a strong effect on the trees' success rate: tree diameter at planting, tree species, irrigation method, and to a lesser extent, the tree supplier. Also, interestingly, the denser urban parts of the town had relatively higher success rates.

PS5-3: PS5-3

Chair: Pornwasin Sirisawat (Mae Fah Luang University, Thailand)

8:30 ***COVID-19 pandemic affected on coffee beverage decision and consumers' behavior***

Akedanai Thubsang, Chanu Thiwongwiang, Chuleeporn Wisetdee, Jutamanee Chompoonuch, Maesaya Anson, Sairin Phalamat and Tosporn Arreeras (Mae Fah Luang University, Thailand)

The objective research was to study the transformation of the coffee consumption behavior of coffee drinkers and factors affecting the coffee consumption behavior before and during the COVID-19 pandemic. Because coffee is a famous beverage among university student groups. Therefore, we want to know the coffee consumption behavior and aspects of coffee drinkers such as the time most people need to consume coffee, the price, and the amount of coffee consumed each day. Both before and during the COVID-19 pandemic. To benefit those who are interested in studying coffee and as a guide for decision making in the business development of coffee shop operators. The sample used in this study is 400 students at the University of Thailand who consume coffee. The questionnaire was used to collect data for surveys of coffee consumption behavior. The study results revealed that consumer behavior has changed in coffee drinking patterns, health effects, and budgets for coffee purchases have decreased. Including the amount of coffee consumed on average per day by consumers, slightly increased from before the COVID-19 pandemic.

8:50 ***Selection of Sustainable Energy Alternatives from Indian Context***

Harsh Bipinchandra Sheth and Maharshi Jayeshkumar Bhavsar (University of Regina, Canada); Golam Kabir (Industrial Systems Engineering University of Regina, Canada)

The next biggest crisis any nation can encounter could be energy deficiency and relying upon conventional power generation techniques. For this, the aim of this study is to prioritize India's sustainable energy solutions considering by various factors like ecological, technological, economic, social, adaptable, and legislative. To determine the weight of these factors, the Fuzzy analytic hierarchy process (AHP) is utilized while the Fuzzy TOPSIS method was used to evaluate the rank of the proposed sustainable energies. The result indicates that the technological and economic factors are the most critical factors and solar energy and wind energy are the most sustainable energy solutions for India. The results of this study can be utilized by the Government of India as well as other nations to evaluate the energy sector including sustainable energy.

9:10 ***New Basic Break-even Analysis Models for Multiple Product Firms***

Kariya Ngamsomsuke (Mae Fah Luang University & School of Management, Thailand); Kamol Ngamsomsuke (Thailand); Wangchuk Rabten (School of Management, Mae Fah Luang University, Thailand)

This paper aims at proposing a new basic model for the computation of break-even points for multiple product firms. The key and new component of the newly proposed break-even models was an equivalent unit conversion factor. We have demonstrated that this new computational method of break-even point for multiple product firms provided a unique break-even solution for any product chosen as a based product on both the basic model. Their unique solutions indicate that the newly proposed break-even models are robust. We also demonstrated that the newly proposed break-even model gives us the true break-even for any combination of the products or sales mix, assumed constant in the traditional basic break-even model. These newly proposed break-even models are thus applicable in the actual operation of the multiple product firm with a basic cost structure

9:30 ***Decision Making For A Proposed Traffic Management Solution With The Application Of IOT Technology***

Tanvi Gupta (Symbiosis Institute of Digital & Telecom Management (SIDTM), Pune Mulshi Road, India); Madhavi Damle (Symbiosis International University (SIU), India)

The Internet, a widely popular term, can be referred to as a communication network that connects people from different geographies to all types of information. In contrast, the Internet of Things (IoT) is a network of physical devices that may be uniquely addressed and identified with varying levels of sensing, storing and actuation potential that have the ability to interact by sharing information using the Internet as their common platform or as a backbone. The Internet of Things (IoT) is a promising and exciting new technology for making our cities innovative and responsive to the requirements of the ever-growing population. Effective traffic management is one such application. It is a highly critical technology for improving the overall infrastructure of a city. This could include various features such as monitoring the parking spots in the towns, monitoring vibrations and material states of layovers, overpasses, and premises, installing sound sensing and monitoring devices in different areas of cities like schools and hospitals and monitoring traffic levels. Even though there has been substantial growth in traffic management systems over the past few years, intelligent traffic monitoring remains a hot topic due to emerging technologies such as the Internet of Things (IoT). When it comes to identifying the best possible route and the exact levels of traffic congestion, Maps by Google is now the most popular destination. It does not appear to be a solution to traffic congestion by only a look around. To handle traffic congestion more effectively, we'll need a more complex and intelligent system.

9:50 ***Evolving Journey of Chatbots: Insights into Business Decisions and Management Applications***

Kunal Chhabria (Symbiosis International University & Symbiosis Institute of Digital and Telecom Management, India); Madhavi Damle (Symbiosis International University (SIU), India)

Rapid digitization, as well as the emergence of the internet and mobile devices, has altered how individuals connect with one another and with businesses. Chatbots are specially designed and developed computer programs that interact with humans by simulating a conversation. Chatbots engage with their human partners using a variety of frameworks, ranging from a simple text interface to speech recognition capabilities. Conversational Agents are an evolved version of chatbots, where we use Natural Language Processing (NLP) to make the interaction between the bot and humans much more realistic and simpler. Business organizations are paying close attention to these 'virtual assistants' since they have the ability to improve customer service and even decrease expenses in customer service centres by automating and handling several clients simultaneously. We have discussed the historical backdrop of chatbots, as well as the background for chatbots and conversational agents, two types of dialogue systems, in this paper, and create a timeline to better comprehend their advancement. Next, we will find out how small and medium-sized businesses can reap the benefits of AI Chatbots, by looking at various ways that chatbots can add value to businesses. Finally, we will investigate how companies use Chatbots for conversational marketing.

PS5-6: PS5-6

Chair: Phasuk Nithibandanseree (Mae Fah Luang University, Thailand)

8:30 ***The Effect of Perceived Ease of Use, Perceived Usefulness & Quality of Information on Interest in Transactions Using E-Commerce (Study on Generations Y & Z in Aceh Province)***

Febrianda Febrianda (Syiah Kuala University, Indonesia); Indayani Inda Indayani I (Universitas Syiah Kuala, Indonesia)

This study aims to determine the effect of the independent variables (perception of ease of use, perceived usefulness and quality of information) on the dependent variable (interest in transactions using e-commerce). This research is located in Aceh Province in August 2021. The population of this study is all generations of Y and Z in Aceh Province. The number of samples involved in this study were 467 respondents. Sampling was done by using quota sampling technique. The results of this study indicate that: (1) There is a partial effect of perceived ease of use on interest in transactions using e-commerce in generations y and z in Aceh Province, (2) There is a partial effect of perceived usefulness on interest in transactions using e-commerce in generations y and z in Aceh Province, (3) There is no partial influence of information quality on interest in transactions using e-commerce in generations y and z in Aceh Province, (4) There is a simultaneous influence of perceived ease of use, perceived usefulness and quality of information on interest in transactions using e-commerce in generations y and z in Aceh Province. Perceived ease of use, perceived usefulness and quality of information.

8:50 ***Crop Suitability Prediction Model for Malaysian Crop Diversification***

Er Pin Keong (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Vazeerudeen Abdul Hameed (Asia Pacific University of Technology and Innovation, Malaysia)

Crop diversity is one of the important perspectives to be observed in agriculture. The crop diversity is significant for production stability as well as nutrition security. However, the crop diversity in Malaysia is inadequate as the agricultural activities are devoted to oil crop plantation. Therefore, this research aims to discover the suitable new tropical crops to be cultivatable in Malaysia for crop diversification. FAOSTAT was selected as data source, while Decision Tree, Random Forest and Artificial Neural Network were chosen for predictive model training. The Random Forest is having the highest accuracy among the modelling techniques. Therefore, Random Forest models were chosen as crop suitability predictive models to discover the suitable crop with Malaysian environmental data as input. There are nine tropical crops subjected to investigation. The crops are dates, sorghum, yams, avocados, kola nuts, chickpeas, lentils, sisal and fonio. Dates, sorghum, yams, avocados and kola nuts were predicted to be not suitable to the Malaysian environment. Whereas chickpeas, lentils, sisal and fonio were predicted to be cultivatable with the Malaysian environment. Unlike other crop diversification research that done on other countries, which are soybean cultivation in Europe, red kidney bean in Iraqi and Cassava in Thailand. This research investigated the potential of nine tropical crops besides soybean, red kidney bean and cassava. At the same time, the crop suitability was predicted with respect to Malaysian environment. Future works are suggested to investigate the procedure of new crop cultivation and the tactic to release the crop to the market.

9:10 ***Analysis of Feature Selection and Data Mining Techniques to Predict Student Academic Performance***

Mukesh Kumar (Lovely Professional University, India); Chetan Sharma (Chitkara University Himachal Pradesh, India); Shamneesh Sharma (UpGrad Education Pvt Ltd, India & UpGrad Campus, India); Nidhi Walia (Chandigarh University, India); Nazrul Islam (K L Deemed University, Andra Pradesh, India)

Educational Data Mining is a field of study that aims to find patterns and information in educational institutions through mining educational data. To become a better teacher, teachers need to anticipate their pupils' performance patterns. Knowledge gained from it can be used in various ways, such as a strategic plan for delivering high-quality education. This report suggests that students' final grades can be predicted using data mining techniques based on past research. On two educational datasets related to mathematics classes and Portuguese language lessons, three well-known data mining approaches, such as Decision Tree, JRip, Naive Bayes, Multilayer Perceptron, and Random Forest, were utilized in the experiments. As a result, using the employed data mining methods, student success might be predicted with reasonable accuracy.

9:30 ***Smart Health Technology Model for Adoption of IoT in Automobiles for Driver's Safety***

Afreen Iqbal (Asia Pacific University of Technology and Innovation (APU), Malaysia); Muhammad

Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

Evolution of transport systems is going side by side with the human history. Nowadays, it has become hard to imagine a life without a vehicle. To accommodate the enormous growth in population, the number of vehicles also have been increased rapidly. Apart from providing convenience, this has also resulted in increased number of road accidents and deaths. This research is focused on adoption of IoT in automobiles for driver's safety to overcome the number of road accidents. This research proposes a smart health technology model that consists of an IoT based steering wheel equipped with the sensors and cameras as well as the architectural description of implementing it. The architectural model provides a communication framework between driver, service provider, patrolling police, ambulance service and the mobile application users in the nearby cars. Authors have used the literature review and expert interviews as the basis of collecting input and applied tool-based data analysis techniques to reach conclusions. Authors have also performed the validation of the model using expert review to ensure that the proposed architectural model is generally acceptable and can provide the reflection of real-world requirements.

9:50 ***IoT-based CO2 Gas-level Monitoring and Automated Decision-making System in Smart Factory using UAV-assisted MEC***

Md Masuduzzaman, Ramdhan Nugraha and Soo Young Shin (Kumoh National Institute of Technology, Korea (South))

Monitoring the CO2 gas level in a smart factory is essential as the high levels of CO2 gas negatively affect the human body, causing various physical problems. This paper presents an Internet of Things (IoT) based CO2 gas level monitoring and automated decision-making system inside a smart factory using the unmanned aerial vehicle (UAV) and multi-access edge computing (MEC) technique. Firstly, different IoT device is used to continuously monitor and detect the CO2 gas level data using gas sensors. Due to the drawback of sink node failure and the centralized data collection technique of wireless sensor networks, a UAV-based continuous CO2 gas level monitoring approach has been introduced in this study. Moreover, the MEC-enabled data processing technique is utilized by offloading the sensor data from the UAV considering its limited battery capacity and low processing power. Finally, a blockchain-based secure decision-making system is designed to evacuate the smart factory premises by alerting all employees in an emergency case of an excessive level of CO2 gas existence. Result analysis shows that the IoT devices can successfully monitor and detect the CO2 gas level in the smart factory using the UAV. Furthermore, the UAV can securely offload sensor data to the MEC server to analyze and make an automated decision to alert all employees in a smart factory to evacuate if CO2 levels are too high.

PS5-7: PS5-7

Chair: Phutawan Ho (Mae Fah Luang University, Thailand)

8:30 ***IoT in Fault Detection and Prediction***

Dhruv Shah (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

The objective of this research is to study industries using IoT with other technologies in fault detection and come up with a convenient and universal solution for fault detection. This paper will benefit practitioners, implementers, and managers in implementing it in their environment. It is a concept paper and we propose a solution to increase the uptime of the machines/ systems. We will be collecting and analysing qualitative data on the current trends of IoT in fault detection and performing our research on secondary data. We will be analysing different approaches made tackle faults in many different industries. By analysing the industries, we would try to come up with a universal solution to help different industries in fault detection and predicting any faults beforehand. With the help of various other technologies for example cloud computing, machine learning, big data, and analytics the usability and universality of IoT have increased. It helps us in getting real-time stats for processing and making better business decisions.

8:50 ***IoT in Farm Productivity Enhancement***

Rishabh Roy (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

With the changing climatic conditions, variability in the number of resources in different geographies, decreasing land resources, limited irrigation supply, rising prices of inputs, and increasing stress factors, there is a need for sustainable agriculture practices. Deploying embedded physical microsensors, nodes, software and electronic components together forming an ecosystem to track and monitor the health of the crop and weather to digitize agricultural practices. Usage of such advanced technology into agriculture will help in evaluating irrigation needs, crop conditions, predict weather forecasts, and allow the farmers to take precautionary measures. Monitoring farmlands using IoT system and networks of devices allows remote sensing with real-time data. The study is aimed to analyse the impact of digital and IOT applications in terms of farm production and revenue contribution to the economy. The research will cover the applied technological aspects, benefits of digitizing agriculture, comparison with developed foreign agricultural practices and its scope in India. Scope of the research covers contribution of advanced technology in agriculture towards improving farm production and resource optimization. The analysis will further support the potential of digitizing agriculture and provide data in terms of production, revenue and contribution to extensively implement IOT in agriculture. The study will benefit companies, government and other auxiliary parties in mapping the outcome of their investment in this aspect.

9:10 ***Retail Gaze: A Dataset for Gaze Estimation in Retail Environments***

Shashimal Senarath, Primesh Pathirana and Dulani Meedeniya (University of Moratuwa, Sri Lanka); Sampath Jayarathna (Old Dominion University, USA)

The concept of gaze object prediction, predicting a bounding box for a person's gazed-at object, is a very applicable and contemporary technique in the retail industry. However, a review of recent works demonstrates that existing gaze object prediction-related datasets in retail is limited to controlled environments and do not consider retail product category area segmentation annotations. To this end, we propose Retail Gaze, a dataset for gaze estimation in real-world retail environments. Retail Gaze is composed of 3,922 images of individuals looking at products in a retail environment, with 12 camera capture angles. Furthermore, we use state-of-the-art gaze estimation models as baselines to benchmark the Retail Gaze dataset and comprehensively analyze the results obtained.

9:30 ***IoT in Inventory Management***

Smitha Smitha (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

Evolution of businesses is happening with the advancements in technologies so is happening in the retail industry. One such technology is IoT which is building a smart environment for informed manufacturing by connecting products, processes, infrastructure and people. With the penetration of digital sensors, all the components of the manufacturing value chain system can significantly benefit from it that allows high visibility and better control of production processes and also enables the automation of tasks side by side. (Objective) This research reviews how IoT can revolutionize inventory management in retail sector and focuses on the present scenario, challenges in implementing IOT for inventory management, and future scope of IOT in this field. It includes analysis of the various technologies currently being implemented like RFID, IIOT to optimise the inventory. (Research Methodology) A narrative literature review approach has been adopted for the study using the academic documents published in peer reviewed scientific journals, white papers, articles and data mining of the existing records and databases. (Implications) This study aims to help the academicians, supply chain professionals and experts by keeping them in line with recent developments, challenges and future scope of IOT in the domain of inventory management. (Originality) It is to analyse how IOT has been integrated into the day-to-day operations of retail market and stores to improve and optimise the inventory and how it can be further be improved.

9:50 ***Multi Layered Deep Neural Network for Feature Extraction in Cross Domain Crowd Counting***

Janith Gunawardhana, Rukmal Senavirathne and Buddhika Karunarathne (University of Moratuwa, Sri Lanka)

Automated crowd density monitoring is an emerging area of research. It is a vital technology that assists during recent disease outbreaks in preserving social distancing, crowd management and other widespread applications in public security and traffic control. Modern methods to count people in crowded scenes mainly rely on Convolutional Neural Network (CNN) based models. But the model's ability to adapt for different domains which is referred to as cross domain crowd counting is a challenging task. To remedy this difficulty, many researchers used Spatial Fully Convolutional Network (SFCN) based crowd counting models with synthetic crowd scene data. They covered many image domains with few-shot learning to reduce the domain adaptation gap

between source and target image domains. In this paper, we propose a new multi-layered model architecture instead of SFCN single-layered model architecture. The proposed model extracts more meaningful features in image scenes along with large scale variations to increase the accuracy in cross domain crowd counting. Furthermore, with extensive experiments using four real-world datasets and analysis, we show that the proposed multi-layered architecture performs well with synthetic image data and few-shot learning in reducing domain shifts.

PS5-9: PS5-9

Chair: Nattaphon Rangsaritvorakarn (Mae Fah Luang University, Thailand)

8:30 ***An Intelligent Fire Detection and Extinguishing Assistant System Using Internet of Things (IoT)***

Pramod Mathew Jacob (Providence College of Engineering Chengannur & Chengannur, India); Jeni Moni (Providence College of Engineering Chengannur, India); Roja Robins, Merlin Varghese, Sherlin Babu and Vismaya Bose (KTU, India)

Fire accidents are one of the major problems facing in our society. Fire detection and extinguishing should be done efficiently to decrease the risk of fire accidents. Currently fire rescue men are doing services to extinguish fire. But in some cases, it may lead to the loss of lives of firemen. We propose an intelligent mini fire-fighting robot using Arduino UNO for this purpose. The proposed robot will detect and extinguish fire automatically without human intervention. The robot can also be manually controlled using an Android App to extinguish fire. The Android app also notifies the user about the fire outbreak through alert messages and alarm. Thus, our system can be used in fire outbreak situations to detect and extinguish fire in an efficient and effective manner.

8:50 ***Sign Language Translation Assistant using Machine Learning***

Jeni Moni, Renju Varghese, Anjali Binoy, Blessy Benny, Lisna Rajan and Bijin Benni (Providence College of Engineering Chengannur, India)

One of the most important and greatest that have been achieved in the past few years is the invention of sign language. But unfortunately, it is not widely known by the common people and only the trained ones will be able to understand it thereby making it harder for the deaf-mute people to communicate with the common world. For solving this many inventions like sign language translating systems were also made. But for the existing systems there are many faults and misconceptions that reduce the accuracy of the system. In this model, camera of a smartphone device has been used to capture the images of the hand gestures as input and based on CNN model used to train the dataset of the proposed system it classifies the hand gesture inputs and give the text translations as the output of the system.

9:10 ***Applications, Tools and Technologies of Robotic Process Automation in Various Industries***

Shagun Sharma (Chitkara University, India); Anjali Kataria (Chitkara University); Jasminder Sandhu (Chitkara University, India)

Now days every industry from healthcare to banking is revolutionized and working automatically to deal with online processes using Artificial Intelligence (AI) to work with Machine Learning (ML) enabled systems. A subfield of AI called Robotic Process Automation (RPA) came into play to automate the human tasks. It is a technology for the automation of repetitive processes to minimize workload and time of human agent. It is best known for fast processing, handling huge amount of data and reduces computational time, cost by improving accuracy, quality and speed. This technology is becoming famous and used in many sectors like education, agriculture, pharmaceutics along with accounting to enhance work mechanism. Every industry, generate huge amount of data in each year which is very difficult to manage. RPA has many advantages, features and applications from dealing with huge data to reducing man power and enabling the system to work automatically. There are various platforms like- Power Automate, Pega, WorkFusion, Jacada, WinAutomation, NICE systems, Automation Anywhere, Blueprism and UiPath, in which RPA could be implemented to automate the tasks. Further, in this article, pros, cons and applications of RPA are identified along with the ML approaches used for RPA processes.

9:30 ***Bahdanau Attention Based Bengali Image Caption Generation***

MD Sayedur Rahman (Bangladesh University of Business & Technology - (BUBT), Bangladesh); Md

Sahrial Alam, Md Ikbal Hosen and Khairul Anam Mubin (Bangladesh University of Business and Technology, Bangladesh); Sharif Hossen (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology, Bangladesh)

In the past few years, many works are done in object detection using images and machine translation. Inspired by those works we introduced BABBICG that generate automatically bangla caption based on images. The Conventional encoder-decoder architectures performance curse will reduce by Bahdanau Attention and achieving momentous improvements over encoder-decoder architectures. In this work, we extract features from images using InceptionV3 neural network and generate caption using RNN decoder. We used Gated Recurrent Unit (GRU) approach as RNN. We evaluate the model using BanglaLekhaImageCaptions dataset from Mendeley Data that can help to generate bangla caption.

9:50 ***An Experimental Comparison of Classification Algorithms for Premium Beef Customer Buying Intention***

Nattaphon Rangsaritvorakarn (Mae Fah Luang University, Thailand); Suthep Nimsai (Mahidol University, Thailand); Korawit Fakkhong (Mae Fah Luang University, Thailand); Chatrudee Jongsureyapart (School of Management, Mae Fah Luang University, Thailand)

This study aimed to explore and compare machine learning performance to predict the customer purchasing decision within premium beef shops. The sampling locations were Thailand. The population used in the study consisted of 436 valid responses from 5 premium beef shops. The data was obtained by using questionnaires consisting of gender, age, three questions of product, one question for the price, one question for the place, and three questions for appearances. The study was used four classifier algorithms: k-nearest neighbors, decision tree, random forest, and xgboost model. The models were compared to find the highest accuracy for premium beef customer behavior data set. Random forest algorithms were evaluated to have the best performance in predicting premium beef purchasing decisions in Thailand. The model has an accuracy of 88.62 percent, precision of 88.46 percent, recall of 85.19 percent, f1 of 86.79 percent, and AUC of 95 percent. The most accurate algorithms can be used to forecast consumer product purchases and comprehend the principles of elements that influence buying decisions.

PS5-8: PS5-8

Chair: Tosporn Arreeras (Mae Fah Luang University, Thailand)

8:30 ***An Intelligent Smart Bin System for Solid Waste Management in Smart Cities***

Jeni Moni (Providence College of Engineering Chengannur, India); Pramod Mathew Jacob (Providence College of Engineering Chengannur & Chengannur, India); Shital Pawar (Bharati Vidyapeeths College of Engineering for Women, India); Renju Varghese (Providence College of Engineering Chengannur, India); Prasanna Mani (VIT Vellore, India); Girish K K (Providence College of Engineering, Chengannur, India); Graham G (Providence College of Engineering, India)

Waste Management and Processing System is important as the amount of waste generated by every city is increasing drastically. Managing large amount of waste is a very difficult task. One of the herculean tasks in this scenario is the procedure for checking the waste bin levels manually. So, we need a smarter way for collecting and managing the waste in an efficient manner. This model introduces an IoT aided smart waste management system which uses various sensors to detect the level of garbage in the bin. When the waste reaches a certain threshold value, an alert message is transmitted to the authorities concerned so that proper actions can be initiated for waste management. This system also aims to help the waste collector to track and locate the bins easily through the possible shortest path using Travelling Salesman Algorithm. An Android application is also created which helps the administrator to control and coordinate various activities and also the users to locate the nearby bins. Thus, the model is both economical and time saving.

8:50 ***Smart City Assessment for Sustainable City Development on Smart Governance: A Systematic Literature Review***

Usman Ependi, Adian Fatchur Rochim and Adi Wibowo (Diponegoro University, Indonesia)

smart city is a concept in the sustainable development of cities. Smart city assessment measures smartness based on various smart city indicators. One of the indicators in a smart city is smart governance which aims to provide public services through ICT support. Various phenomena and issues in smart city assessment (smart governance) are crucial for exploration, especially in indicators, capabilities, stakeholders, weaknesses, and factors influencing smart governance. A literature review is an analysis model used for exploring smart city assessment. The phases performed consist of three main steps. The first phase of preparation consists of identifying requirements and developing a review protocol. The second implementation phase consists of searching, selecting, and extracting materials. The third phase is reporting (dissemination of results). This study reviews the SCA to answer various phenomena, especially indicators, capabilities, stakeholders, weaknesses, and factors influencing smart governance. The review results show various issues and phenomena in the smart city assessment. The issue in the indicator aspect is the first step that needs to be fixed. The issue in the capability aspect lies in the characteristics of the city to be measured. The stakeholder aspect has a problem in the field of involving various stakeholders to get the results of the assessment from multiple points of view. At the same time, the issue on the weakness aspect is paying attention to smart city goals and world standards. Stakeholders require more pay attention to the issue of smart city assessment. Therefore, the process and implementation adhere to the smart city's standards and its objectives. Influences have been identified, namely policy domain, trust, political & institutional environment, internet reach and use, and spatial characteristics

9:10 ***Augmented Reality in Agriculture***

Ritu Lachhwani (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

The World population is expected to become around 9.8 billion by 2050 and with this rise in population the demand to feed them is also growing. However, Agriculture sector is not completely equipped to fulfil these demands efficiently. Emerging technologies can help aim the sustainable and efficient ways of farming. Objectives: To find the areas in which Augmented Reality can be implemented for Precision Farming. To automate the farming practices in order to gain higher yields and quality of agricultural product and to make agriculture sustainable. Research Methodology: A secondary research is done using documents published in peer reviewed scientific journals, white papers and articles. Existing data of Agriculture sector, before and after the implementation of technologies, is used for quantitative analysis. Implications: This research paper aims to benefit the Farmers by reducing their efforts and resources in farming as well as increasing the production output and efficiency. It also aims to help people associated with agriculture (Businessmen, Scientists, Academicians) in finding a way for smart farming.

9:30 ***Improving Agricultural Productivity: Use of Automation and Robotics***

Nikita Biswas (Symbiosis International Deemed University, India); Avinash Aslekar (Symbiosis International Deemed University & None, India)

In the last few years, it is seen that robotics have been extensively adopted in the agricultural industry to enhance its productivity and competency. New trends and researches focus on the agricultural field of robotics that looks forward to building a group of small-scale robots that will collaborate to optimize farming practices. Objectives: This research paper emphasizes on the deployment of robotics and the use of automation in agricultural applications. It explores the practicality of these robots towards agricultural development and also the perspective of farmers on such robots used. Research methodology/analysis: Analysis of the data collected from certain surveys of farmers on the use of robots and automation in farming is used to find a descriptive result of a future perception of agricultural industries. Application of such Agri-bots for different methods of farming and the relation between farmers and automation is collected from secondary data retrieval. Finding: There are different robots and different levels of automated machinery used in the agricultural industry, along with farmer's point of view on robots, the paper will be covering the different Agri-bots that are deployed and automated for specific agricultural methods. Implications of the study: This paper will be useful to the agricultural industries, and will give a clear idea of the level of investment that should be implemented on automated guidance systems and robots in farming with respect to the decrease in farmers and increase in automation. Originality: The paper discusses the farmer's perspective on automation in farmer. It gives a glimpse of whether the farmers are sceptical about the safety and terms of reliability in using these agricultural robots on their land. This paper will also include the number of human interactions between these autonomous machines and robots. The number of such robots with different levels of human dependency and full autonomous functionality will be discussed.

9:50 ***Light weight integrity protection scheme for low latency smart grid applications: A Literature Review***

Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Akram A. Almohammedi (South Ural

State University, Malaysia); Ammar AL-Ashmori (Universiti Teknologi PETRONAS & Yemen, Malaysia)

A smart grid is a developed network of communication controls, computers, digital automation, and new technologies in tools working together to make the grid more efficient, more flexible, and more reliable. smart grid is providing cost-effective electricity to consumers in a secure manner. This paper focuses on different schemes used for the protection of data integrity, authentication of data, and secure integration of smart grid components. We review the existing approaches used for the integrity and security of data transmitted in smart grid systems. We review the existing approaches (i.e., watermark, steganography) used for privacy, authentication, the confidentiality of data and information along with their limitations. We also discuss the importance of strict time-constrained applications with high security and protection of data integrity transmitted over smart grid components. This paper will help to develop a better understanding of current authorization, authentication, and data integrity issues in smart grid systems also give directions to explore relevant areas for research purposes.

Friday, March 25 10:10 - 10:20 (Asia/Bangkok)

Break: Coffee Break

Friday, March 25 10:20 - 12:00 (Asia/Bangkok)

PS6-4: PS6-4

Chair: Krit Sittivangkul (Mae Fah Luang University, Thailand)

10:20 ***Facility Location Problem to Identify The Optimal Allocation of Near-Expired COVID-19 Vaccines***

Anak Agung Ngurah Perwira Redi (Bina Nusantara University, Indonesia); Gerlyn Altes, Arni Acla and Justine Kyle Chan (Mapua University, Philippines); Parida Jewpanya (Rajamangala University of technology Lanna Tak, Thailand); Anak Agung Ngurah Agung Redioka (STIMIK Primakara, Indonesia); Yogi Tri Prasetyo and Michael Young (Mapua University, Philippines)

Coronavirus 2019, popularly known as Covid-19, which was declared a pandemic by the World Health Organization in 2020, has affected billions of people and claimed millions of lives. Leaders and corporations worldwide have worked feverishly to develop a vaccine to combat the virus. After numerous tests and trials, covid-19 vaccines were developed. Given the magnitude of the need for vaccination, these vaccines should not go to waste due to expiration from slow-paced rollouts or oversupply. This study aims to maximize near-expired COVID-19 vaccines in cases of oversupply by distributing them in neighbouring facilities at a low delivery cost and by utilizing P-median modelling. All gathered data were loaded into and run through the AMPL simulation model, with varying P-values or the number of facilities to be located to act as suppliers to the remaining demand nodes. Following the model simulation, it was observed that the P-value is inversely proportional to the cost; therefore, the cost of delivering near-expired Covid-19 vaccines to the demand clusters decreases as the P-value increases. Through the simulation model, the researchers determined which node facilities, if opened, would incur the lowest delivery cost.

10:40 ***Architectural Design and Development Recommendations for iBeacon based Smart Shelves in a Retail Store***

Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Junie Halim (Asia Pacific University of Technology and Innovation (APU), Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia)

The growth in digital technology has given most sectors an economic boost, especially retail. Digital technology has successfully made a new concept of an online store and brick-and-mortar presence. However, a physical store is still in demand for most

individuals, considering the convenience of grab and go without waiting for delivery. Some recent studies found that most retailers face the same issue with the customers who tend to be more demanding towards selecting a product with specific brands. Therefore, the retail sector, which could provide more products, brands, and freshness, will win, whereby small retailers could only depend on pricing to beat the competitor. Henceforth, the researchers have proposed the implementation of iBeacon based smart shelves for retail stores based on IoT devices. This research mainly focuses on most retailers' current state and issues. The study was conducted using a survey with sixty audiences from the retail sector. This research critically evaluates similar systems and justifies the use of IoT devices and other infrastructural components using a systematic approach, and finally proposes the architecture and recommendations for building the iBeacon based smart shelves for retail stores.

11:00 ***Mixed-Integer Linear Programming Model for Safe Zone Selection during Air Pollution Disaster***

Phongsaphak Thoenburin and Chawis Boonmee (Chiang Mai University, Thailand)

According to the air pollution disaster problem in Thailand, the human health problem becomes a significant issue. Many researchers and the government of Thailand attempt to help the people to avoid this problem. This paper aims to propose a model for safe zone selection during air pollution disasters. The mathematical model is applied to seek suitable locations for the case study under several conditions such as budget limit, capacity limit, bound of the number of selected locations in each area, and bound of total score obtained from the evaluation. The numerical data were generated for testing the proposed mathematical model. Based on the numerical data, the results found that the proposed mathematical model could generate the optimal solution and seek suitable locations for building safe zones in the air pollution disaster under the proposed limitations. This research will be of great significance in helping government consider the strategic placement of safe zones and helping people avoid the hazard of air pollution.

11:20 ***A review of the elements of a fabrication laboratory to develop engineering prototypes***

Sutthinee Srisawat (King Mongkut's University of Technology North Bangkok & Division of Information and Communication Technology for Education, Thailand); Panita Wannapiroon and Prachyanun Nilsook (King Mongkut's University of Technology North Bangkok, Thailand)

Unemployment is a global problem which, as well as being the source of scarcity and other problems, threatens people's well-being. Effectively addressing the issue is one of the new challenges of the workplace in the age of digital technology. Tertiary education institutions strive to develop people's potential before they enter the world of work. Developing the necessary skills - including operational skills with tools - requires laboratory training. A fabrication laboratory is an open space that promotes tooling skills, along with systematic and creative thought processes and inventiveness. All these can, in turn, form the basis of innovations that will benefit the community as a whole. This study began by looking at the trends and research related to fabrication laboratories. Then, in Step 2, it analysed and synthesised the relevant research, examined the elements of the fabrication laboratory, created a synthetic table and, finally, summarised the results. These showed that most of the research consisted of eight elements: 1) design spaces, 2) rapid prototyping tools, 3) electronic instruments, 4) mechanical tools, 5) scientific instruments, 6) a Group Learning Toolkit, 7) other tools, and 8) learning exchange or publishing spaces. This study is a review, therefore, of the research relating to the elements in the proper learning environment of a tertiary education fabrication laboratory. It is necessary if we are to develop the potential of learners across all sectors before they enter the world of work.

11:40 ***Trajectory Control of Quadcopter in Matlab Simulation Environment***

Seda Nur Yaşar (Firat University, Turkey); Ebru Karakose (Fırat University, Turkey)

An unmanned aerial vehicle (UAV) is an autonomous aircraft without a pilot and passenger. UAVs are also called "drone". However, while drone is used to refer to any type of UAV in the common language, it mainly refers to UAV mostly used in military context. UAVs and today's competent usage areas are mentioned in this study. A detailed examination of quadcopters, which is a four-engine unmanned aerial vehicle, is given and it is emphasized why simulation is necessary for UAVs. The implementation of the study is carried out in Matlab-Simulink and the quadcopter is simulated in the Matlab environment. Two different simulation processes are considered in the study and with the Simulink model used for the first simulation, the trajectory tracking problem is tried to be overcome by adding a direct Eulerrate script instead of the PD controller output. A second simulation is needed to fly the UAV in a circular trajectory. When the results obtained for both simulations are examined, it has been determined that the second simulation provides a more periodic trajectory tracking than the first simulation.

PS6-1: PS6-1

Chair: Sirikan Chucherd (Mae Fah Luang University, Thailand)

10:20 ***Automatic Detection of Brain Tumor from CT and MRI Images using Wireframe model and 3D Alex-Net***

Shilpa Rani (Lovely Professional University, Punjab, India); Sandeep Kumar (K L University, India); Deepika Ghai (Lovely Professional University, India); MVV Prasad Kantipudi (Symbiosis Institute of Technology, Symbiosis International Deemed University, India)

Automatic detection of brain tumor from CT and MRI images is always an effortful task because of complexity and heterogeneous nature of images. Many neural networks architecture (NN) have recently been developed for segmentation and classification tasks and have proved quite successful. Studies that have taken into account the sizes of items have been rare; as a result, the majority of them show poor detection performance for little objects. This has the potential to have a big influence on illness identification. Recently, 3D neural network became popular because they are able to work with large labelled dataset. We proposed a 3D Alex-Net based architecture which can classify the different type of brain tumor at early stage. First, the contour of the image is identified and given to the classifier for the class-wise identification. We tested our proposed approach on RSNA-MICCAI brain tumour and found that proposed method delivers the highest accuracy, and the results provide a clear advantage for classification of brain tumor in medical images.

10:40 ***Classify the Outcome of Arterial Blood Gas Test to Detect the Respiratory Failure Using Machine Learning***

Sivapathasuntharam Kajanan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Banage T. G. S Kumara (Sabaragamuwa University of Sri Lanka, Sri Lanka & University of Aizu, Japan); Kuhaneswaran Banujan (Sabaragamuwa University of Sri Lanka, Sri Lanka); Senthan Prasanth (Physical Sciences and Technology, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka, Sri Lanka); Manitheepan Kandiah (James Paget University Hospital, United Kingdom (Great Britain))

Analysis of Arterial Blood Gas (ABG) is an important investigation to measure oxygenation and blood acid levels. It is crucial in measuring the clinical status and contributes to an efficient and effective healthcare plan. Generally, ABG is applied in the emergency care units (ECU) and intensive care units (ICU). Most of the time, the doctors and nurses have difficulties identifying the type of respiratory failure with the help of ABG test results. So, during this research with the adaption of certain supervised machine learning approaches, namely Extreme Gradient Boosting (XGBoost), Adaptive Boosting (AdaBoost), Catboost, Random Forest, Naïve Bayes, Support Vector Machine (SVM), LightGBM, K-Nearest Neighbors (KNN), Neural Network (NN) and Decision Tree and have been incorporated with the intension of identifying the type of the respiratory failure with the highest accurate technique. To fulfil this purpose, 700 patient test results have been obtained from a public hospital in Sri Lanka. From the results discovered, XGBoost outperformed against all other techniques in identifying the type of respiratory failure with the highest accuracy of 98.65% and the lowest error rate of 1.35%. To ensure whether the XGBoost outperformed against the different percentages of training and testing data, K-fold cross-validation with five folds also has been performed with the dataset. The cross-validation produces results with an accuracy of 98.45% and the lowest error rate of 1.55%. In conclusion, XGBoost has been utilised in developing the prediction model. This would be a promising start for a future research scholar to adopt the hybrid techniques and the deep learning techniques to identify the causes of respiratory failure and the prediction of the type of respiratory failure.

11:00 ***Novel Composite Feature Fusion for Diabetes Diagnosis using Artificial Neural Network***

Kaustubh Sharma (Ramrao Adik Institute of Technology, India); Pramod Haribhau Kachare (IIT Bombay & Ramrao Adik Institute of Technology, India); Sandeep Baban Sangle (D Y Patil University & NA, India); Rohit Chudiwal (Vellore Institute of Technology & Vellore, India)

Diabetes is a chronic disease that causes excess blood sugar and can harm vital organs if untreated. The conventional diagnosis methods require special laboratory equipment and medical experts. For alleviating these issues, the paper presents an early fusion of novel features using exploratory data analysis for automated diabetes diagnosis. Evaluations are performed using

the Pima Indian Diabetes Diagnosis dataset. Firstly, inter-attribute correlation analysis identifies the redundancy in attribute pairs. Moderately correlated attribute pairs form the novel five continuous composite features by either multiplying or dividing depending on diagnosis computational aid and individual features values. Novel composite threshold-based linear separators are used to generate eleven binary features. Dataset attributes and composite features are fused with four earlier reported features calculated by principal component analysis to generate a feature vector. A cross-validated multi-layer perceptron neural network resulted in the best accuracy of 93.51%. Comparative analysis with several earlier reported diabetes diagnoses showed the proposed work's superiority.

11:20 ***Polyp Segmentation in Colonoscopy Images using U-Net and Cyclic Learning Rate***

Betül Bulut (Tarsus University, Turkey); Ertan Bütün and Mehmet Kaya (Firat University, Turkey)

Colonoscopy is an important procedure in the diagnosis of colorectal cancer. The use of computer aided systems has become important to support clinicians performing colonoscopy and to reduce the number of missed polyps. Image segmentation studies using deep learning achieves successful results and can play a crucial role on diagnosis procedure of colorectal cancer. We trained Unet architecture for polyp segmentation and determined the learning rate, one of the most important training parameters, using Cyclic Learning Rate policy. The results show that the success rate is increased in the segmentation task performed Unet with Cyclic Learning Rate policy. In this study, we have contributed to more accurate detection of polyp diagnosis, which can be a precursor to cancer, by using the UNET architecture with an effective learning rate strategy.

11:40 ***Classification of Body Cavity Fluid Cytology Images Using Deep Learning Models***

Murat Ucan (Dicle University, Turkey); Mehmet Kaya (Firat University, Turkey)

Cytological examinations have an important role in the detection of cancerous cells. The use of convolutional neural networks in the classification of medical images has become an increasingly popular topic. Detection of malignant cells with artificial intelligence methods will ensure that human errors are minimized. Within the scope of the study, it is recommended to perform cytological examinations faster and easier by using deep learning methods. In this study, Body cavity fluid cytology images dataset with open access via kaggle was used. Classification of cancerous cytological fluid samples was made using AlexNet, GoogleNet and ResNet50 architectures. Afterwards, the results were compared with another study using the same data set in the literature. The results showed that the Resnet Architecture achieved the most successful results in the classification of cytological images. ResNet50 architecture achieved 99.13% accuracy, 98.75% sensitivity and 99.25% specificity.

PS6-9: PS6-9

Chair: Ammar Jreisat (University of Bahrain, Bahrain)

10:20 ***The impact of Company Characteristics and Macro Factors on Stock Prices: Machine Learning approach***

Bui Thanh Khoa (Industrial University of Ho Chi Minh City, Vietnam)

The stock price forecast is one of the critical topics in the financial sector. Determining factors affecting the stock price helps investors capture the trend of change, thereby making appropriate decisions. The main objective of this study is to use the Maximum Likelihood (ML) method for dynamic table data and compare it with Ordinary Least Square (OLS), Generalized Method Of Moments (GMM) in the machine learning approach. The study was conducted in the Ho Chi Minh City stock market (HOSE) from 2017 to 2021. Data includes 302 non-financial companies listed on hose markets. This study divided the data into two parts: training includes 202 companies, and the testing includes 100 remaining companies. As a result, the model uses the efficient ML method with the lowest RMSE and MAE. Therefore, the ML method should be considered an alternative method for the GMM method in estimating the data-related parameters.

10:40 ***How Environmental Performance and Cost Decisions Impact to The Financial Performance? Case of Mining Industry***

Indayani Inda Indayani I and Ayu Wandira (Universitas Syiah Kuala, Indonesia)

The issue of environmental impacts caused by the mining industry which is listed on the Indonesian stock exchange and its handling has still surfaced. This issue has motivated this research to review the effect of environmental performance and environmental costs on financial performance of 12 mining issuers on the Indonesian stock exchange with an observation period of nine years (2010-2018). Multiple linear regression analysis with SEM-PLS was used to verify the research model. The results show that both of them have a negative correlation both on environmental performance with financial performance and environmental costs on environmental performance. Environmental impact cases due to the operation of mining companies and the high cost of environmental management may be the causes for the decline in the mining company's financial performance. Thus, this becomes a dilemma for companies and the government is expected to help them overcome this dilemma.

11:00 ***Can Carbon Emission Disclosure, Environmental Performance, and Corporate Social Responsibility Improve Firm Value in Indonesia?***

Nazila Nazwa (Syiah Kuala University, Indonesia); Fauziah Aida Fitri (Economic and Business & Syiah Kuala University, Indonesia)

The purpose of this study was to examine the effect of carbon emission disclosures, environmental performance, and corporate social responsibility on firm value. The sample of this research consists of the 27 largest carbon emitting companies listed on the Carbon Disclosure Project and the Indonesia Stock Exchange from 2016-2019. The total sample observed was 108 annual report data from the selected companies. Using multiple linear regression, this study found that carbon emission disclosures, environmental performance, and corporate social responsibility have a positive effect on firm value. The results of the study show that companies that disclosed more detailed information on carbon emission disclosures, environmental performance, and corporate social responsibility have improved firm value.

11:20 ***The Impact of Oil Price Changes on the Stock Markets in Main Oil Exporting Countries: The Role of COVID-19***

Somar AL-Mohamad (American University of the Middle East, Kuwait); Ammar Jreisat (University of Bahrain, Bahrain); Mohamed Sraieb and Audil Khaki (American University of the Middle East, Kuwait); Mustafa Raza Rabbani (University of Bahrain, Bahrain)

This paper aims at contributing to the existing literature on impact of oil price shocks on stock markets in oil exporting countries by measuring the impact of COVID-19 pandemic of the dynamic patterns and time path of reactions of stock markets in oil exporting countries to oil price shocks before and during the COVID-19 pandemic, in addition to investigating the most significant structural breaks in these markets during the time period from 2013 and 2021. The results in this study indicate that the majority of developing oil exporting in this study have experienced a major structural break in their stock markets in during the drastic oil price decrease in 2014, whereas their developed counterparts have been subject to structural break during the CIVID-19 pandemic. The outcomes of the generalized impulse response analysis indicate that, in general, stock markets in oil exporting countries are more influenced by oil price changes during COVID-19 pandemic as compared to pre-COVID-19 sub period.

11:40 ***Oil prices and the stock market: How COVID-19 impacts oil-importing countries?***

Mohamed Sraieb (American University of the Middle East, Kuwait); Ammar Jreisat and Mustafa Raza Rabbani (University of Bahrain, Bahrain); Somar AL-Mohamad, Nasser El-Kanj and Audil Khaki (American University of the Middle East, Kuwait)

This paper aims at measuring the impact of COVID-19 pandemic on the dynamic patterns and time path of reactions of stock markets in oil importing countries to oil price fluctuations in pre and during COVID-19 pandemic. This paper also depicts the significant structural breaks in oil exporting stock markets during the time from 2013 and 2021. The results in this study indicate that the majority of the oil importing markets have been subject to a major structural break during COVID-19 period, whereas the stock markets in China, Spain, Germany, and Japan experienced structural changes in 2014 and 2018 due to oil price shock and domestic economic factors, respectively. The results in this paper also find that, in general, the stock markets under consideration have become less responsive to one standard deviation change in oil price during COVID-19 as compared to the pre pandemic sub-period. the outcome of this study implies and recommends policy makers in these countries to take further steps toward enhancing the dependence on the alternative energy resources such as solar power and wind in order to make their economies less vulnerable to the global energy market's shocks.

PS6-3: PS6-3

Chair: Abdulsattar Alazzawi (University of Bahrain, Bahrain)

10:20 ***Factors Affecting Community-based Enterprises' Customers Buying Decision: A Case Study of Chiang Rai OTOP Project***

Teeris Thepchalerm and Phutawan Ho (Mae Fah Luang University, Thailand)

Customer buying decision has always been a popular research subject. However, there are very few studies dedicated to community-based enterprises' customers. Therefore, this article aims to identify the significant factors that affect community-based enterprises' customer buying decisions. The data collected from a community-based project called One Tambon One Product project's customers were analyzed by exploratory factor analysis and revealed five main groups of significant factors. This article also proposes some practical implications for community-based enterprise and the policymakers regarding community-based enterprise.

10:40 ***Leadership Cultural Intelligence to Improve Decision Making Process in Cross-Cultural Work Atmosphere***

Marwan Mohamed Abdeldayem and Saeed Hamedd Aldulaimi (Applied Science University, Bahrain); Abdulsattar Alazzawi (University of Bahrain, Bahrain)

The aim of this study is to provide an empirical evidence on the value of using a coherent organizational framework of Cultural Intelligence (CQ) to pursuing tasks effectively in diverse contexts. Hence, a qualitative research design was used to achieve the research objectives. The study employs in-depth Interviews with 60 participants from Gulf Air (GA) to collect the required data for this research effort. The open-ended qualitative questions used, have enabled participants to provide supplementary evidence around cultural intelligence and were valid for interpretation. This study provides an understanding of how individuals perform in multicultural environments, which can be helpful to managers in formulating new motivational strategies to enhance employee performance. The results show significant characteristics that predict employees' ability to function effectively in a multicultural work environment. These findings have implications for GA and other companies looking for survival and growth in the global marketplace. Given the research findings, senior leaders of GA (and other airlines companies) should give CQ a priority, define and develop its goals, and value employees with high CQ to improve organizational performance in international assignments.

11:00 ***Synergetic Effect of Entrepreneurial Orientation and Big Data Analytics for Competitive Advantage and SMEs Performance***

Muzaffar Asad (University of Bahrain, Bahrain); Muhammad Uzair Asif (University Utara Malaysia, Malaysia); Ather Azim Khan (University of Sialkot, Pakistan); Zafrul Allam (University of Bahrain, Bahrain); Mir Satar (Saudi Electronic University, Saudi Arabia)

Small and medium enterprises are considered as the backbone of any developing economy. The growth rate of small and medium enterprises in Pakistan is low because of performance issues. This is because of use of traditional methods, whereas the world is moving towards digitalization. The literature over performance in developed countries identified the importance of big data analytics and entrepreneurial orientation for gaining competitive advantage and higher performance. Hence, this study has considered entrepreneurial orientation and use of big data analytics as the basic element for gaining competitive advantage to achieve high performance. The data has been collected from purposefully chosen 100 firms that were implementing big data analytics for decision making. The data was collected using adopted questionnaire with 7 Likert Scale for measuring the responses. The owners and managers of the firms were chosen as the representative of small and medium enterprises. The findings, after ensuring the reliability of the instrument, revealed that entrepreneurial orientation and big data analytics have a strong direct impact over performance and the two variables were explaining 41.5% variation in performance. Afterwards competitive advantage was introduced in the model, and it was observed that competitive advantage has significantly increased explained variation to 53.9%. The mediating role of competitive advantage between big data analytics and performance was significant at 5% level of significance, whereas the mediating role of competitive advantage between entrepreneurial orientation and performance was significant at 10% level of significance. The findings ensured that the use of big data analytics is crucial for higher performance, growth, and survival of firms in the digital era. The findings contribute to the resource-based view by adding the role of big data analytics and extending the theory to performance rather limiting it to competitive advantage.

11:20 ***Investigation of Governmental Strategy Prioritization for Greenhouse Gas Emission Reduction based on the UN Environmental Program***

Ali Karasan (Yildiz Technical University, Turkey); Fatma Kutlu Gündoğdu (National Defence University, Turkey); İhsan Kaya and Bestami Özkaya (Yildiz Technical University, Turkey)

The greenhouse gas emissions (GHGE) are the primary reason for climate change, leading to disastrous events such as storms, droughts, sea-level rise, and floods already being felt worldwide. Many essential contracts and protocols have been discussed and implemented worldwide to reduce GHGE. Among them, The Paris Agreement, the most important global climate agreement to date, was adopted, and Turkey is one of the countries that signed. Similar to country-based incentives, to reduce GHGE globally, the United Nations (UN) has determined strategies at three action levels: government, private and public levels. Based on Turkey's current situation, in this study, a decision-making procedure that focuses on governmental action plans to reduce the GHGE in Turkey for the determined sectors by the UN environmental program is suggested. To do that, one of multi-criteria decision-making (MCDM) methods Best-Worst method is suggested based on z-numbers that can consider the data's impreciseness and the hesitancy of the experts. The proposed methodology is applied to prioritize 35 action plans concerning six sectors. Based on the 23-experts judgments, Energy, Industry, and Transportation are determined as the most critical sectors that should be debated. Moreover, committing to more ambitious nationally determined contributions and energy transition strategies is determined as the most appropriate action plan that the policy-makers can consider.

11:40 ***The Continuous Intention to E-learning System Adoption of Students in the Covid-19 Pandemic: The combination of TAM and TTF theory***

Bui Thanh Khoa, Nguyen Thi Phuong Thao and Lung Thi Kieu Oanh (Industrial University of Ho Chi Minh City, Vietnam)

Because of social distancing, many students must study at home using an E-learning system in the Covid-19 pandemic. This paper aims to study the continuous intention to use the E-learning system of students in the Covid-19 pandemic by applying the Theory of Technology Acceptance (TAM) and the Theory of Task-Technology Fit (TTF). This paper applied both the qualitative and quantitative methods. The purpose of the qualitative method is to confirm and adjust the scale, whereas quantitative research aims to figure out if there is a continuous intention to use the E-learning system of students in the Covid-19 pandemic. The result indicated that students in Vietnamese universities tend to continue using E-learning not only in the Covid-19 pandemic but in the future, they will keep using E-learning because of social influence and its usefulness ease of use. Based on the results, the study has proposed several recommendations to improve and develop E-learning for Vietnamese universities for the future development of Vietnamese education.

PS6-7: PS6-7

Chair: Popkarn Arwatchanakarn (Mae Fah Luang University, Thailand)

10:20 ***Does Banking Performance Matter for Indonesian Economic Growth?***

Maulidar Agustina and M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia); Said Musnadi (Universitas Syiah Kuala, Indonesia); Faisal Faisal and Hafasnuddin Hafasnuddin (Universitas Syiah Kuala (USK), Indonesia); Yahya Yahya (Sekolah Tinggi Ilmu Ekonomi Sabang (STIES), Indonesia)

This study examines the contribution of commercial banking performance to Indonesian economic growth over the period from January 2010 to December 2019. Specifically, it empirically explores the short- and long-run effects of total credit, loan to deposit ratio, non-performing loan, return on assets, third party funds, and inflation on the industrial production index. Using a Vector Error Correction Model (VECM), the study found that the commercial bank has an insignificant contribution to the Indonesian economy in the short run. However, in the long run, the total credit, loan to deposit ratio, and third-party funds positively contributed to the national economy. These findings reconfirmed the positive role of the banking sector in promoting the long-run economic growth of Indonesia. These results provide some important implications for the banking industry to offer more innovative products and services based on digital banking and fintech. In addition, the Indonesian Monetary Authority should support banking activities and develop an efficient credit allocation mechanism using advanced fintech in responding to the 4.0 era to further promote the

real sector of the Indonesian economy.

10:40 ***Knowledge Economy and Investment Decision aided by Regional Innovation development: A Framework***

Madhavi Damle (Symbiosis International University (SIU), India); Bala Krishnamoorthy (Narsee Monjee Institute of Management Studies (NMIMS), India)

In today's competitive era, the growth in regional business competencies stimulates the regional economy. Business development necessitates readiness in the availability of appropriate resources. The proposed framework derives integration of businesses when aggregated efficiencies in industries within the region and so as a practice. This study attempts to conceptualize the regional innovation framework with measurement parameters from other studies as a review. Furthermore, regional efficiencies are vital as we move towards the knowledge-led economy. The proposed framework is in terms of Innovation Capital, Businesses under industries aggregated, capabilities such as internal skill development, business orientation, collaborative perspective, and knowledge management to compete within Industries, with their performance measures as Innovation success. Moreover, this study also compares the present Indian Innovation Index (2020) for the deficiencies. These lack strong measures for development within regions. Thus, this study focuses on the Innovation Index performance as a primary objective derived from a substantial solid foundation of parameters of enablers making a "Regional Portfolio" using the studies from eminent innovation indices. The study contributes to framework development for achieving regions' readiness levels. The implications that this study sets out are long-term plans for enhancing efficiencies for Knowledge-based economies, required efforts, investment decisions.

11:00 ***The effects of global investment assets on the Thai stock market***

Popkarn Arwatchanakarn, Hathaichanok Kuendee and Jakravut Srijunngam (Mae Fah Luang University, Thailand)

This paper sets out to examine the factor affecting the Thailand stock market, especially bitcoin, by applying the autoregressive distributed lags (ARDL) approach and the Bayesian VAR model with Gibb sampler with the data ranging from October 18th, 2017 to September 17th, 2021. The overall results show that the bitcoin and S&P500 index are two primary determinants of the Thai stock market. Both bitcoin and the S&P500 have a positive impact on the SET index, at least in the short run. Conversely, the volatility index and the gold price have a marginally negative impact. In particular, bitcoin can be considered as alternative asset for investors' portfolio choice.

11:20 ***Investment decision in cloud gaming-based businesses opportunities: An analysis of the cloud gaming industry***

Pranav Shrivastava (Symbiosis University, India); Madhavi Damle (Symbiosis International University (SIU), India)

Cloud gaming is a form of computing that combines cloud computing with computer games. It has several advantages over other types of gaming, the most prominent of which is developer ease of development/deployment. Consumers don't have to spend as much money on high-end devices to play games because cloud games can work on thin client devices. This paper seeks to provide a quick overview of the existing cloud gaming industry and information on how emerging technologies can aid in cloud gaming development by referring to all previous studies on the subject. This study also intends to forecast market size and compare cloud gaming platforms based on their delivery services as of the research data. This study will also identify weaknesses and opportunities of cloud gaming by SWOT analysis.

11:40 ***A Decision Support Framework to conceptualize the Impact of 5G on Smart City Ecosystem***

Honey Joshi (Symbiosis Institute of Digital and Telecom Management, Symbiosis International University, India); Sujata Joshi (Symbiosis International University - Institute of Telecom Management, India)

5G, fifth-generation technology, is driving digital transformation in the smart city ecosystem by allowing huge number of connections concurrently and omnipresence of the network. There are abundant discrete studies on technology use cases

related to smart cities; however, the impact of 5G technology has not been significantly covered as of yet. Therefore, the aim of the paper is to understand impact of 5G technology on Smart City ecosystem and how it leads to smart decision making. A decision support framework is used to structure the process of deriving insights for better decision making. The study explores the following aspects related to the concept; a) Applications of 5G in Smart city ecosystem b) Decision support framework for the impact of 5G in Smart City ecosystem. Narrative literature review approach has been used in which literature related to the emerging 5G technology has been analysed with respect to smart cities. Academic documents published in peer-reviewed scientific journals, reports, and articles have been used for research. The paper aims to provide insights to academicians on the use of 5G applications in a smart city ecosystem, and practitioners on developing solutions for Smart Cities using 5G technology for effective decision making.

PS6-8: PS6-8

Chair: Kiki Khoifin (Mae Fah Luang University, Thailand)

10:20 ***Measuring Total Factor Productivity of Zakat Institutions in Aceh, Indonesia***

Hafasnuddin Hafasnuddin, Zulkifli Zulkifli, Dinda Meisuri and M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia); Yahya Yahya (Sekolah Tinggi Ilmu Ekonomi Sabang (STIES), Indonesia); Hijri Juliansyah (Universitas Malikussaleh (UNIMAL), Indonesia)

This study aims to measure and decompose Total Factor Productivity (TFP) of zakat institutions (Baitul Mal) across 24 districts/cities in Aceh province, Indonesia over the period from 2015 to 2019. Using Data Envelopment Analysis (DEA) to calculate the Malmquist TFP Index, the study documented that, on average, the TFP level of Baitul Mal in managing zakat has slightly improved, contributed mainly by technical progress. Meanwhile, the reduction in efficiency level has deteriorated the TFP of zakat institutions. Overall, the zakat institutions across 24 districts/cities in the province have recorded different levels of TFP. A proper policy design is strongly needed to further enhance the productivity of zakat management by optimally utilizing and properly combining existing resources to raise the highest zakat funds and its distribution. Zakat institutions are suggested to fully utilize the online-zakat payment system.

10:40 ***Islamic Listed Companies and Their Decisions for Timely Financial Reporting: Case of Indonesia***

Khalil Dasli, Ridwan Ibrahim, Ratna Mulyany and Zata Zuhri (Universitas Syiah Kuala, Indonesia)

This study aims to determine what influences financial reporting timeliness in the context of Islamic listed companies. It seeks to identify whether profitability, managerial ownership, institutional ownership, opinion of public accountants, and activity ratios influence financial reporting timeliness of companies listed in the Jakarta Islamic Index (JII), Indonesia. Sample consists of 24 companies which are listed on the Jakarta Islamic Index during the study period of five years (2014-2018). Using multiple linear regression analysis, this study revealed that all of the independent variables consisting of profitability, management ownership, institutional ownership, public accountant opinion, and activity ratios, have significant influence on the timeliness of financial reporting of firms listed on the Jakarta Islamic Index (JII). This finding implies that even within Islamic listed companies, financial reporting timeliness is very much dependent on various company attributes hence the company performance in terms of profitability as well as other factors of ownership structure and operational efficiency such as activity ratio seems to align well with their decisions to report timely. The importance of financial reporting timeliness shall even be more prevalent for companies listed at the Islamic index due to their association with the distinctive characteristics of shariah requirements.

11:00 ***Can the Islamic Banks be Efficient? A Data Envelopment Analysis (DEA) in Indonesia***

Muhajirul Asrar, Ratna Mulyany and Darwanis Darwanis (Universitas Syiah Kuala, Indonesia)

There have been doubts and critiques over the existence of Islamic banks and whether they can function efficiently given their distinctive characteristics. Hence more studies are needed to examine the Islamic banks' efficiency. Using the Data Envelopment Analysis (DEA) technique, this study evaluates the efficiency of Islamic banks in Indonesia from 2018 to 2020. Sample of 14 Islamic banks in Indonesia was utilized resulting the total 42 observations for analysis. Data were acquired from financial statements on the Indonesia Stock Exchange's official website. The findings reveal that most of the Islamic banks in Indonesia

were highly efficient in the three years period of study. The 14 Islamic banks during 2018 to 2020 were laid in category very efficient and efficient, wherein, on average, all Islamic banks in Indonesia were at an efficient level. The findings implies a positive overall performance of Islamic banks in terms of its efficiency hence investors and stakeholders may have greater confidence in the Islamic banks. This also indicates the promising future for the further development of Islamic banks.

11:20 ***Islamic Banking, Economic Growth, and Poverty Reduction in Indonesia***

Maulidar Agustina (University of Syiah Kuala & USK, Indonesia); M. Shabri Abd. Majid (Universitas Syiah Kuala (USK), Indonesia); Said Musnadi and Faisal Faisal (Universitas Syiah Kuala, Indonesia); Hafasnuddin Hafasnuddin (Universitas Syiah Kuala (USK), Indonesia); Suriani Suriani (Universitas Syiah Kuala & USK, Indonesia)

This study aims to examine the role of Islamic banks, economic growth, and price stability on poverty reduction in Indonesia over the period from 2010 to 2019. A monthly time series data of Total Financing (TF), Financing to Deposit Ratio (FDR), Non-Performing Financing (NPF), Return on Assets (ROA), and Third-Party Funds (TPF) were used to measure Islamic banking role, while the economic growth, price stability, and poverty were respectively measured by Industrial Production Index (IPI), Consumer Price Index (CPI), and Poverty headcount ratio (POV). An Autoregressive Distributed Lag (ARDL) bound test is utilized to examine the short- and long-term effects of Islamic banks, economic growth, and price stability on poverty reduction in Indonesia. The study documented that Islamic banking, economic growth, and price stability had the significant short- and long-term effects on poverty reduction. These findings offer various key implications for the banking industry and policymakers in order to eradicate poverty through strengthening economic growth, Islamic banking sector, and price stability. The Islamic banking industry should provide a quality of financing allocation to promote economic growth and price stability that, in turn, reduce poverty.

11:40 ***Role of Internal Control in Improving Financial Management-Based Performance: The Case of Mosques in Banda Aceh City, Indonesia***

Ghrina Zikran (Universitas Syiah Kuala, Indonesia); M. Shabri Abd. Majid and Suriani Suriani (Universitas Syiah Kuala (USK), Indonesia)

This study aims to examine the moderating effect of internal control on the relationships between asset management, debt management, and good mosque governance on the performance of mosques in Banda Aceh City, Indonesia over the period from 2016 to 2020. Of 104 mosques within 9 sub-districts in the city, 20 of them were selected as the sample of the study using a multi-stage sampling technique. From each 20 selected mosques, 5 staff of mosques (observations = 100) were asked to fill up the distributed questionnaires. Since the study utilized the panel data, thus the study used the moderated multiple regression panel technique. The study discovered that asset management and good mosque governance had a significant effect on mosque performance, while debt management has an insignificant effect on mosque performance. In addition, internal control was documented to have an insignificant moderating effect on the relationships between asset management, debt management, and good mosque governance on the mosque performance.

PS6-5: PS6-5

Chair: Samatthachai Yamsa-ard (Mae Fah Luang University, Thailand)

10:20 ***Understanding usage of IoT Applications and its impact on consumer decision making in Indian Automobile industry***

Shreya Wasnik (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

This research study aims to have a looming level towards modernist users who prefer in the vehicle buying sector, technology-driven features tightly connect development processes with software-driven feature updates. New generation people account for a sizable portion of the market for technology-driven automobiles; however, the older generation is exhibiting an equal degree of interest in similar purchasing and sale preferences. Hence, all leading Indian and global automakers started adopting and

inculcating many Internet of Things (IoT) features in the latest models of their automobile fleet; The way forward for the sector is clear and full of possibilities. It's time to kick it up a notch. These trends attract more automobile users as they consider such modern features to add safety and durability as human security has been considered the prime factor in today's world. This study elucidates the benefits of adopting IoT in Indian automobiles by the significant involvement of Gen Z. Despite several impediments, India's automobile sector has persevered and continues to grow. The industry's distribution channels are rapidly evolving, original equipment manufacturers (OEMs) are upbeat, digitization is accelerating, and the sector's potential is limitless

10:40 ***Segmentation and Multi-Layer Perceptron: An Intelligent Multi-classification model for Sugarcane Disease Detection***

Rishabh Sharma (Chitkara University, India); Vinay Kukreja (Chitkara University, Punjab, India)

Sugarcane disease detection has been an active area of research for past decades, due to the increasing demand and supply of the crop, the higher production level led to a hike in the number of diseases encountered in the crop. Sugarcane red rot (SRR) is one of those diseases which has a draconian effect on sugarcane production and to eliminate that factor a multi-layer perceptron (MP) based deep learning (DL) model has been developed to build a system for identification and classification of 2000 image dataset of SRR disease based on 5 different disease levels. 99.12% of binary classification and 99.15%% of best multi-classification accuracy have been encountered along with a comparison of various levels of SRR disease. The proposed model has been proved to be an efficient model in terms of accuracy results for the classification of an image.

11:00 ***Application of AI, IOT and ML for Business Transformation of The Automotive Sector***

Mayank Jain (Symbiosis International-Deemed University, India); Prasanna Kulkarni (Symbiosis International Deemed University, India)

Automotive industry is essential in human lives. It is not possible to imagine a day without driving or some public transport. Today, digital technologies are making motor vehicles and the industry more intelligent. The entire value chain of automotive business is transforming. A better connect with customers is needed. All this is possible through advanced digital technologies. Automotive companies are overhauling business processes and relationships. Legacy IT systems for manufacturing, engineering, supply chain, etc. are being reinvented. This transformation encompasses software, robotics, connected devices, and artificial intelligence. Artificial intelligence (AI) made the dream of self-driving cars possible. AI will soon transform every device. Tesla, Google Waymo, and Nvidia are examples of machine learning algorithms used to detect how far different objects are, from the car. Augmented reality (AR) and virtual reality (VR) analysis enables users to watch blind spots. AI enhances security by simultaneous coordination with many sensors. With AR, VR, and mixed reality (MR), automotive companies have a personalized retail platform and a competitive edge. This paper studies AI applications in the automotive sector. It studies the recent developments and applications of AI. It discusses how companies use AI for cost reduction, market strategies, sales promotion, and even funding.

11:20 ***Deep Convolutional Neural Network for Detection of Cigarette Smokers in Public Places: A Low Sample Size Training Data Approach***

Erickson C. Santiago (Batangas State University, Philippines)

Cigarette smoking is not only known to be harmful to the smokers' health but also to the people around them and despite the efforts made by the government such as creating policies for controlling tobacco use and increasing tax rates, second hand and third hand smoke that may harm the health of the people in public still occur. A solution for detecting smoking violators in public places is presented. This will be beneficial to the public as each smoker can affect many individuals going to their work or just having fun outside of their homes that do not smoke but still suffer from second-hand smoke or even third-hand smoke. To create a smoking detection, the YOLOv3 model was used to develop a not smoking and smoking detection model. The detection model that was created for this paper has a training and validation accuracy of 96.2% with a mAP value of 91.36%.

11:40 ***A Retrospective CNN-LSVM Hybrid Approach for Multimodal Emotion Recognition***

Rupali Gill, Jaiteg Singh and Aditi Moudgil (Chitkara University, India)

Emotions play a vital role in a person's life and it affects their physically. Therefore, emotions can be manipulated by measuring customer perception of a place. People use facial expressions as a tool to express emotional states. Face recognition is

always an exciting and challenging area for research on computer perspective. In this study, seven emotions such as anger, disgust, fear, happy, sad, surprise and neutral states have been classified through facial expression images. This paper presents a novel CNN-LSVM hybrid approach for multimodal emotion recognition. The proposed approach uses two datasets namely CK+ and FER-2013 images for emotion recognition. During CNN experimentation, several texture features have been extracted which have been used for classification purposes. The classification of texture features is achieved through the linear support vector machine technique. The LSVM model is responsible to classify the texture features. Throughout CNN, different hyperparameters such as batch size, epochs, and momentum have been used. With help of the CNN-LSVM approach, 92.3% average classification accuracy for different emotions has been achieved.

PS6-6: PS6-6

Chair: Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India)

10:20 ***Sentence Level Sentiment Classification Using Machine Learning Approach in Bengali Language***

Tuhin Hossain, Ahmed Ainun Nahian Kabir, Md. Ahasun Habib Ratul and Abdus Sattar (Daffodil International University, Bangladesh)

Opinion mining, often known as sentiment analysis has been an impactful area of research in recent times. Numerous studies have taken place in natural language processing to extract sentiments or opinions from the text in order to build context-aware systems. However, a major portion of those studies was mainly based on the English language. Only a handful number of sentiment analysis research has been conducted on the Bengali language. Moreover, the quantity of state-of-the-art Bengali datasets is also very limited. In this paper, we highlight a unique dataset that consists of Bengali sentences extracted from various reputed online newspapers and social sites. This dataset has been crafted manually in person, and it also includes two class sentiment tags. Our approach can be implemented an intelligent system that deals with the Bengali language which is able to extract sentiments from the mentioned dataset.

10:40 ***A Bibliometric analysis of blockchain and its applications in the Insurance Industry***

Durga Maduri (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The objective of this research paper is a comprehensive study on how Blockchain can revolutionise Insurance sectors by improvising efficiency in gains and cost reductions and eliminating the duration taken for uncovering the information or fraudulent claims. This paper uses a narrative literature review approach. The critical aspect of this research paper lies in how effectively Insurance Industry is transforming and adapting to digital technology by employing blockchain in their process. In order to save time and lower their transactional costs by ensuring zero threat from cyberattacks, which is a key area to improve their customer experience and enhance their profits by retaining the old customers with utmost satisfaction. This study benefits insurers by saving their transactional costs, eliminating fraudulent crimes, and uncovering information.

11:00 ***A case study Evaluation of Blockchain for digital identity verification and management in BFSI using Zero-Knowledge Proof***

Md Akram (Symbiosis Institute of Digital and Telecom Management, India); Anshuman Sen (Symbiosis Institute of Digital and Telecom Management & Symbiosis International University, India)

The BFSI sector represents a significant portion of any developing or developed economies of the world involving all Banking, Insurance, and Non-Banking Financial Institutions. This sector is the biggest buyer of identity management technology solutions and services. This accentuates the pivotal role of a robust identity authentication mechanism in the BFSI sector. The rapid proliferation of digitization in the different financial sectors, disruptive technological innovations around different services, and everchanging user behaviors are revolutionizing the way in which the institution of this sector interacts with their customers, employees, and other stakeholders. The definition of great consumer experience has widened in scope and includes facets

like consumer trust, security, real-time, etc. The traditional identity verification system like passwords, pins, biometric, facial recognition, etc. are prone to vulnerabilities. Blockchain addresses the lacunas in the present system by using a decentralized approach to transform digital identity. The purpose of this research paper is to study the use of blockchain in digital identity verification, the benefits it brings to identity management, and different techno-commercial use cases. This paper will also examine the Zero-knowledge proof and the role of cryptography. For this study, a case study technique was used, in which different use cases of blockchain for digital identity management in the BFSI sector have been analyzed. Academics, practitioners, and government officials will benefit from the research article in investigating, implementing, and developing solutions for digital identity verification using blockchain.

11:20 ***Facilitating decision making through IoT and Big Data in product development***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Swastika Singh Singh (Symbiosis International (Deemed University), India)

When it comes to product development, a new wave has set forth that targets the very specific needs of a very specific customer base, which in turn leads to the development of hyper-specialized products. Hyper-specialization, when coined simply, is the breaking down of a larger process into smaller pieces [1]. This involves complexities and criticality as it caters to the intricate details of regular life. What happens when we objectify this term and give it a 3D reality? The evolution of the Internet of things has made it possible for the devices embedded in everyday objects, to send and receive data themselves. However, with the current trend of the personalization of the market, where companies target niche industries, the products need to cater to the very specific needs of a very specific customer. As the market has shifted more to the process of individualization of customers, this research paper aims to shed some light on the usage of the Internet of Things and Data Analytics to build a design model for such products. The idea is to mix the technologies of the Internet of Things and data analytics with product management while studying the market for its recent trends and developments. Since this technological bend focuses more on value creation and building new insights into the usage pattern, this concept is more focused on shifting from an asset-centric transactional model to a relationship-oriented service model.

11:40 ***Decision making with iot- paving an integrated approach***

Samaya Venkatesh Pillai Iyengar (Symbiosis International (Deemed University) & Symbiosis Institute of Digital and Telecom Management, India); Soumya Bajpai (Symbiosis International Deemed University, India)

While IoT has many benefits, its real strength lies in marketers' capacity to look at their consumers from a far larger perspective, regardless of touch points or phases in the total customer life cycle. Starting with better listening and involvement is a good place to start, though. A better client experience from beginning to end is another matter. This is where the Internet of Things (IoT) may play a role, not just in consumer applications, but also in industrial applications where simple value can be produced. To effectively use IoT in marketing, marketers must think outside the box and offer relevant services in a way that is useful and relevant to actual customers. This is a chance for marketing that is both comprehensive and customer-centric, as well as integrated.

PS6-2: PS6-2

Chair: Hatem Masri (University of Bahrain & University of Sousse, Bahrain)

10:20 ***Optimal Sizing of PV, Wind based Grid Connected Hybrid Renewable Energy Systems for Rural Areas in Presence of EVs***

Bikash Parida (NIT Durgapur WB, India); Aashish Kumar Bohre (NIT Durgapur, India)

This paper represents the need for optimization of a HRES which comprises solar, wind and battery. In this paper a detailed study of a system which is connected to a grid and combined with different kind of renewables is given. The location used in this case study is Siliguri, West Bengal. Here, the whole simulation study has been done in Hybrid Optimization Model for Electric Renewables (HOMER) software. The geographic location of the study area is 26°43.6'N (lat) and 88°23.7'E (long) respectively.

The objective of this paper is to get a reliable independent system and levelized cost of energy. Two loads have been connected to the system, one is a household load and the other load is for charging of an electric vehicle and renewables such as PV and Wind has been used. The optimum architecture means the size of the PV array, wind turbine, and number of battery string, are optimized by HOMER. Homer helps in optimizing the cost and it calculates the cost of energy (COE) and net present cost (NPC). By the help of NPC and COE, we can find the best system and proper modifications can be done. The optimization result shows that the system consisting of PV, Wind Turbine, Converter and Grid is the superlative system when compared with COE and NPC of system.

10:40 ***The nexus between education and trade openness: Analyzing the role of carbon dioxide emission in Australia***

Pattareeya Meecee, Manthiralai Jiwetpong and Jidapa Nooruksa (Mae Fah Luang University, Thailand)

This study is an attempt to examine the impact of economic growth, government spending, education, carbon dioxide emission, and labor productivity on trade openness in Australia. For this research, we will use the dataset over the period from 1989 until 2019. The ARDL bounding test approach was checked to examine the long-run and short-run relationships of such effects respectively. Additionally, the direction of the relationship between variables could be investigated using VECM Granger causality. In the long run, results showed that economic growth, government spending, education, and CO2 emissions had positive relationships with trade openness, while labor productivity has a negative relationship with trade openness. The result of causality represents the unidirectional from economic growth and labor productivity to trade openness in the long-run relationship.

11:00 ***IoT Based Intelligent Energy Monitoring System for Computer Laboratories***

Lee Wei Zhang (Asia Pacific University of Technology and Innovation (APU), Malaysia); Kamalanathan Shanmugam (Asia Pacific University of Technology & Innovation (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia)

One of the essential infrastructural components of a computer laboratory is electronic equipment. People can work in a light and comfortable environment because of electronic devices. IoT devices are used in the intelligent computer laboratory monitoring system, interacting with software and hardware to improve its effectiveness and usability. Because electronic devices must be turned on during working hours, ways to reduce energy consumption must be found to build a greener society. This can be accomplished by incorporating sensors to collect data on individuals entering and exiting the laboratory in order to manage the electronic equipment's switching. The research aims to use appropriate IoT-based technologies to reduce the energy required to operate electronic devices. After an exhaustive discussion of existing literature and related systems, current developments are critically reviewed. A set of IoT-based solutions is recommended in the study. Using a prototype model, the authors demonstrate how an intelligent computer laboratory monitoring system can attain optimal performance.

11:20 ***A Feasibility Study for Biodiesel Production in Kingdom of Bahrain***

Mona Sahwan (University of Bahrain, Bahrain); Hatem Masri (University of Bahrain & University of Sousse, Bahrain); Lokesh Verma (The Bahrain Petroleum Company (Bapco), Bahrain); Abdulla Alotaibi (Neutral Fuels, Bahrain)

Biodiesel also known as fatty acid methyl ester (FAME), obtained from the transesterification of the vegetable oil used cooking oil (UCO). FAME is considered a renewable fuel to the existing conventional diesel or fossil diesel obtained from crude oil. The necessity for biodiesel production in Kingdom of Bahrain is to minimize the carbon footprint in general, improving sustainability as well as minimizing the impact of our existence on the climate change. The technical and commercial feasibility of the biodiesel in Kingdom of Bahrain is done on a plant, which produces 350 tones/month biodiesel using UCO as main feed. The expected market size for biodiesel in the Kingdom could be as high as approximately 110,000 liters per day, if it is to substitute 10% of the conventional (fossil) diesel utilization by 2025. Currently there is no market for FAME in Bahrain and Government policies are required to promote the use and growth of the biodiesel market in the Kingdom. The capital investment to produce 350 tones/ month biodiesel production is approximately BD400,000 (machinery only). The working capital for 3 months is approximately BD215,000. The raw material contributes to about 96% of the total for biodiesel production. Therefore, a sensitivity analyses is performed to compare the manufacturing costs of a biodiesel. In conclusion, the major cost towards production of biodiesel is raw material. Second most important aspect in biodiesel feasibility is the glycerol price, which is currently quite low. If glycerol purity

could be increased this will at higher price and will help reducing the overall production cost of the biodiesel, which could make it more economical to produce and sell.

11:40 ***Investigation the Impact of using Integrated PV System at Avro City in Duhok-Iraq***

Beren Sardar Abdullah (DPU, Iraq); Siddeeq Yousif Ameen (Advisor & Duhok Polytechnic University, Iraq)

With the rise in the inhabitants of the earth, the demand for energy has been increased causing many problems in the economic and environmental issues. Thus, the move towards cheap and clean energies such as solar energy is the most appropriate and urgent solution to meet the energy demand problem. One type of solar energy is PV (photovoltaic) solar system that is able to capable of meeting energy needs. In this paper the energy shortages specifically at Avro city (large residential complex) in Duhok city-Iraq. The proposed solution was the adoption of a PV system connected to the national grid on the roofs of the buildings. For the assessment and evaluation. A PV Syst software was used to simulate and analyze the performance of the proposed PV system. An 89.6 KWp PV (Monocrystalline silicon) system connected to a grid that with many orientations (fixed axis, vertical axis, horizontal axis(E-W), and dual axis), are used with 216 modules of PV. To meet the most electricity for the building by the PV system, each module has a rating of 415W, and uses three inverters with a rate of 25 Kw for each inverter. The simulation findings were examined in to evaluate the system of photovoltaic performance. This includes assessing the PV array's energy output, energy injected into the grid, performance ratio, and other nominalized energy for each state.

Friday, March 25 12:00 - 13:00 (Asia/Bangkok)

Lunch: Lunch

Friday, March 25 13:00 - 13:45 (Asia/Bangkok)

PN4: Plenary Session 4

Portfolio Diversification In the Presence of Tail Risk

Friday, March 25 13:45 - 15:25 (Asia/Bangkok)

PS7-2: PS7-2

Chair: MVV Prasad Kantipudi (Symbiosis Institute of Technology, Symbiosis International Deemed University, India)

13:45 ***A Review of Logarithmic Multiplier Hardware Architectures***

MVV Prasad Kantipudi (Symbiosis Institute of Technology, Symbiosis International Deemed University, India); Sailaja Vemuri (Pragati Engineering College, India); Venkata Kiran Sanipini (Aditya College of Engineering & Technology, India)

Multiplication is the basics for any arithmetic operations of a central processing unit and graphical processing units. Nowadays, multipliers are widely used in digital image processing, digital signal processing, network security, and multimedia applications. Therefore, high-performance multipliers are mandatory to design and implement fast multimedia devices. Researchers have suggested several high-performance multipliers in the last few decades, such as booth multiplication, Wallace tree multiplication, bough wooley multipliers, karatsuba multipliers, and logarithmic multipliers. Among the various schemes of multiplication

algorithms, logarithmic multiplication is widely used in image processing and multimedia applications due to its high performance. This paper analyses the very-large-scale integration (VLSI) characteristics of different logarithmic multipliers in terms of speed, power consumption, and area utilization. Based on the detailed review, this paper suggests that a logarithmic multiplier that uses an approximation-based multiplier by using the concept of double-sided fault distribution is deemed as a high-accuracy baseline design for implementing instead of using the Mitchell-based algorithm. This approximation-based design is also suitable for area utilization and power consumption.

14:05 ***Mixed-Integer Linear Programming Model for Stochastic Capacitated Lot-Sizing Problem Under Static-Dynamic Uncertainty Strategy***

Nuanpan Buransri and Heng Chheang (Rajamangala University of Technology Isan, Thailand)

This paper revisited the certain equivalent mixed-integer linear programming (MILP) developed by a previous study and provided a new model for solving a stochastic capacitated lot-sizing problem with backorder constraints under the static-dynamic strategy. The existing theories and methods that can be applied to solve the static-dynamic uncertainty strategy are available for both the two-stage and single-stage solutions. The proposed model is an extended version that will answer both "replenishment period" and "optimal replenishment order" simultaneously by considering a joint replenishment environment for multiple items with shared resources (a limited resource), also known as a capacitated lot-sizing problem. The numerical example and sensitivity analysis are performed to investigate the effect of the changes in critical parameters on the behavior of the proposed model, such as the change of the mean of demand or the change of the product holding cost. The result shows that the system will produce the exact amount of demand in each period for each product, resulting in no excess inventory at the end of each period. Furthermore, the model tries to balance the cost of carrying inventory and the setup cost; whenever the system has a small holding cost but high setup cost, the model will produce high quantities for each product.

14:25 ***Protection of PCB from external mechanical influences***

Zainab Hussam Al-Araji (University of Baghdad, Iraq); Nada Ali Swaikat (University of Voronezh State Technical, Syria)

To ensure the protection of electronic devices (RES) in general and printed circuit boards as the central part, any malfunction in their work leads to the failure of the electronic device. This article reviews the nature and conditions of external influences and chooses a method to reduce their impact on RES performance. This paper describes the most common methods for minimizing external mechanical influences on electronic means, and numerical data demonstrates the effectiveness and validates a simulation environment designed to predict the optimal design of radio-electronic devices using Creo simulations.

14:45 ***Performance Analysis on Parallel Data Loading based on Concurrency Features***

Mohammad Ashekur Rahman, Asma Ul Hussna, Fabian Parsia George, Mir Lubna Latif, Yousra Mehrin and A. M. Esfar-E-Alam (BRAC University, Bangladesh)

Data migration and batch processing remain rudimentary processes in database systems while dealing with enormous volumes of data from multiple sources. Even before running Extract, Transform, Load (ETL) on parallel architectures, extensive querying and performance in a way challenges are required. Real-time data analysis, together with data aggregation and transformation, remains a problem for decision-making since data warehouses retain historical data and update it on a regular basis. However, optimization lessens resource consumption as well as ensures parallel processing efficiency while reducing the time window. The ultimate purpose of this paper is to instantly improve the performance of parallel data loading through concurrency. The conducted analysis shows concurrency on the Oracle database significantly improves the performance gain along with data loading time.

15:05 ***An automated pothole detection via transfer learning***

Necip Cinar (Dicle University, Turkey); Mehmet Kaya (Firat University, Turkey)

Potholes on the roads can cause many problems in traffic. They can cause malfunctions of vehicles, deterioration of suspension systems, additional repairs, and traffic accidents. It is very important to detect potholes quickly and with low costs for the maintenance and rehabilitation of roads. This shows that there is a need for automatic systems that can detect structural problems that may occur on the roads quickly and accurately. In this study, DenseNet121 architecture, which is a deep learning-

based method, is proposed for detecting potholes in roads. With the proposed approach, it is aimed to determine whether there are potholes in the road images in the dataset. In this study, potholes on the road were detected with 99.3% accuracy using the DenseNet121 network. This success is quite high when compared to similar studies in the literature. At the same time, this dataset was run and compared with ResNet50, InceptionV3, VGG19 and InceptionResnetV2 models with the same parameters. Among these models, the highest accuracy was obtained with DenseNet121.

PS7-3: PS7-3

Chair: Mullika Jantakad (Mae Fah Luang University, Thailand)

13:45 ***Cybersecurity Awareness Modeling Associated with Influential Factors Using AHP Technique: A Case of Railway Organizations in Thailand***

Pana Ungkap (RMUTP, Thailand); Therdpong Daengsi (Rajamangala University of Technology Phra Nakhon, Thailand)

This study aims to create a method for identifying and evaluating the factors that impact Cybersecurity Awareness (CSA) of Internet users. Focusing on the employees in the railway organizations in Thailand, seven individual different factors, including attitude, cognitive, experience (in cyber-attacks), education and gender are used to determine and measure the factors associated with CSA of users. After conducting a decision-making technique called the Analytic Hierarchy Process (AHP), for deriving the weight of each factor, the study shows that the most important factor is cognitive, its weight is 26.23 %. While the weights of experience, degree (of education), behavior, finance and gender are 22.43 %, 16.41 %, 15.92 %, 10.13 %, 4.99 %, 3.90 % respectively. Therefore, the CSA model associated with those factors is introduced eventually.

14:05 ***Mask R-CNN Architecture Based Railway Fastener Fault Detection Approach***

Merve Yilmazer and Mehmet Karakose (Firat University, Turkey)

Detecting and repairing faults in railway line components is of great importance in terms of transportation safety. Thanks to the successful results of deep learning techniques on images, progress has been made in defect detection studies. In this study, Mask R-CNN architecture, which enables segmentation in deep learning, was used to identify healthy and missing rail fasteners. Healthy and missing fasteners were labeled in the railway images obtained with the autonomous drone. The model was trained using labeled data and the performance of the model was evaluated with the data reserved for testing. It was determined that the method could detect healthy/missing fasteners with high accuracy rates and it was shown in the experimental results section. The precision value of the method is saved as 98% and the recall value as 96%.

14:25 ***Optimized Reward Function Based Deep Reinforcement Learning Approach for Object Detection Applications***

Ziya Tan (& Erzincan Binali Yildirim University, Turkey); Mehmet Karakose (Firat University, Turkey)

Reinforcement learning is considered a powerful artificial intelligence method that can be used to teach machines through interaction with the environment and learning from their mistakes. More and more applications are coming to the fore where Reinforcement learning has been newly and successfully implemented. It is frequently used especially in the game industry and robotics. In this article, a deep reinforcement learning approach, which uses our own developed neural network, is presented for object detection on the PASCAL Voc2012 dataset. Our approach is by moving a bounding box step-by-step towards the goal in order to fully frame the object in the picture. The created neural network consists of a 5-layer structure. In addition, it is aimed to maximize the mAP value by optimizing the reward function. The right choice in the reward policy will certainly affect the outcome and will play an important role in the training of the agent. Thanks to the optimized reward function, ground truth and the bounding box intersect at the highest rate, contributing positively to the result. As a result of the training that lasted for approximately 36 hours, the test results of 6 randomly selected classes were compared with the results of previous similar studies. Within the scope of this article, some artificial neural networks and basic studies in the literature using the Reinforcement learning approach for object detection are examined.

14:45 ***Decision Aid in Logistics during the COVID-19 Pandemic and Significance of a Digital***

Ecosystem

Muhammad Anshari and Quazi Sakalayen (Universiti Brunei Darussalam, Brunei Darussalam); Mia Fithriyah (Indonesia Open University, Indonesia); Syamimi Ariff Lim (Universiti Brunei Darussalam, Indonesia)

The COVID-19 outbreak has resulted in a significant increase in demand for online purchases, which has led to an increase in the demand for delivery staff. The research focuses on a case study to evaluate and examine the effectiveness, obstacles, and scenarios encountered by delivery workers when discovering issues that develop during the COVID-19 period. It analyses the factors that influence how work is delivered in various sectors of the workplace and makes recommendations for the logistics sector's digital transformation, particularly for firms that manage courier services, distribution centres, and e-commerce websites. The Root Cause Analysis (RCA) was utilized to create a proposal to assist the company in avoiding similar future risks, particularly from parcel delivery staff.

15:05 ***Exploring the Logistics Barriers in the Development of Multimodal Transportation; The case of Thai Textiles Export to Bhutan***

Wangchuk Rabten (School of Management, Mae Fah Luang University, Thailand)

This study aimed to explore the logistics barriers in the development of multimodal transportation. Thai textile export to Bhutan has been selected as a case study. Multimodal transport factors time, cost, and reliability with additional six logistics barriers were established and prioritized using AHP based on the current situation to the selected case study. Data were collected using in-depth semi-structured interviews and questionnaires from experts involved in the Thai textile export to Bhutan. The weighted result strongly identified and indicated transportation cost as the most influencing barriers with border infrastructure being ranked highest second level logistics barriers. These results can be applied and used for the development of efficient logistics systems as well as multimodal transportation

PS7-1: PS7-1

Chair: Worasak Rueangsirarak (School of Information Technology, Mae Fah Luang University, Thailand)

13:45 ***Comparison of deep learning models for brain tumor classification using MRI images***

Necip Cinar (Dicle University, Turkey); Buket Kaya and Mehmet Kaya (Firat University, Turkey)

Brain tumor is a type of cancer that can occur in humans, sometimes with fatal consequences, or seriously affect quality of life. Detection of brain tumors using deep learning methods is a very positive development for experts. Deep learning methods enable experts to perform tumor detection and treatment easier and faster. There are many methods are used to detect tumors from brain MRI images. Among these methods, deep learning methods have made a significant improvement over other methods. In this study, it is aimed to compare the models used for tumor detection from brain MRI images within the scope of deep learning methods. For this reason, the five most commonly used convolutional neural networks for brain tumor classification are discussed. VGG19, DenseNet169, AlexNet, InceptionV3 and ResNet101 models, which are Convolutional Neural Network (CNN) architectures, were used. MR images, which underwent the same dataset and preprocessing processes, were trained with these models with the same hyper-parameters. As a result of the study, the ResNet101 model obtained the highest accuracy rate with an accuracy value of 98,6%. In addition, the VGG19 model showed a very high accuracy rate of 97.2%. Other models have accuracy values of InceptionV3 94.3%, DenseNet169 92.8%, and AlexNet 89.5%, respectively. This low success rate reveals that the architectures used in these models are not suitable for studies on MR images compared to other architectures. As a result, it has been concluded that the use of ResNet architecture for tumor detection from brain MR images is more advantageous than other models.

14:05 ***Heart Disease Prediction and Analysis Using Ensemble Architecture***

Rafsun Jani and MD Shariful Islam Shanto (Bangladesh University of Business and Technology, Bangladesh); Md. Mohsin Kabir and Md. Saifur Rahman (Bangladesh University of Business & Technology, Bangladesh); M. F. Mridha (Bangladesh University of Business and Technology,

Bangladesh)

Throughout the world, cardiovascular diseases (CVDs) constitute the main cause of morbidity and mortality. We can reduce premature deaths by identifying those who are at risk of CVDs early. Machine learning has been proven to be efficient in predicting cardiac problems. As a result, developing a prediction model to detect cardiac disease before it progresses to a severe level will provide enormous hope to people all over the world and will help with decision-making. In the artificial neural network and machine learning, classification and regression are common prediction approaches. Most classifiers have flaws and difficulties. However, ensemble architecture could help weak algorithms increase their performance. So, in this study, we offer a unique ensemble architecture that uses a hard voting mechanism to improve performance. XGBoost (XGB), LogisticRegression, RandomForest, and the K-nearest neighbors (K-NN) algorithms are employed in the ensemble architecture. The proposed model scores were obtained with a 94% percent accuracy rate.

14:25 ***A Method for Covid-19 Segmentation from X-Ray Images with U-Net***

Esra Balik and Mehmet Kaya (Firat University, Turkey)

The Covid-19 virus, which emerged in China and affected the whole world, resulted in the death of many people in a short time and caused many socio-economic problems. This virus, which is mostly seen in patients with chronic diseases, has been seen worldwide in cases where it progressed rapidly and resulted in death in healthy individuals. Early diagnosis is one of the most important things to be done for this virus, which has such great effects. It is necessary to minimize the risk by treating the patient after being diagnosed and isolated early. The long time elapsed while providing diagnosis in current diagnostic methods potentially increases the course of the virus. For this reason, it has been deemed necessary to investigate some alternative ways for the diagnosis of Covid-19. In this sense, a study area has been created because radiological images have the defining characteristics of the virus. In this study, Covid-19, pneumonia and normal classifications were first made using X-Ray images. Then, we tried to determine the area affected by the Covid-19 virus using the U-Net system for image tissue classification. Experimental results show us the applicability of the method with high accuracy.

14:45 ***Fuzzy MCDM Approach for Building Private Cloud Medical Records***

Irfan Syamsuddin (State Polytechnic of Ujung Pandang, Indonesia)

This paper aims to introduce the application of Fuzzy MCDM approach to tackle the selection issue in building private cloud medical records. Vast amount medical records currently requires a solution to build cloud data storage. Data storage based on cloud technology is currently required to deal with a continuous demand of electronic medical records in particular during covid 19. Private cloud data center is proposed to overcome the issue of storing daily medical records from sources. The study proposes a Fuzzy MCDM model based on the Analytic Hierarchy Process (AHP) in choosing the best open source cloud data storage for establishing private cloud medical records. There are many perspectives to be compromised during the selection process and all pairwise comparison met maximum inconsistecy rate allowed of 0.1. It is finally concluded that OwnCloud is the most suitable open source solution for solving the given problem.

15:05 ***Iot Enabled Mental Health Diagnostic System Leveraging Cognitive Behavioural Science***

Alankrita Rawat (Symbiosis International Deemed University, India); Saikat Gochhait (Lavale & Symbiosis International: Deemed University, India)

As the complexities of mental disorders grew in tandem with the COVID-19 pandemic, a technical solution to this problem became urgently necessary. To cater to the needs of those who are unable to reach out for direct assistance, IoT-enabled mental health diagnostic systems, in combination with cognitive-behavioral science, are a lifesaver. Advanced devices are used to track various hormones in the body and to apply behavioral and cognitive science to generate effective results. For the purpose of this research, we will review various Research Papers and articles published between 2010 and 2021, highlighting the findings added by these reports and the areas in which they were unable to explore. This research will be highly useful to numerous network and architecture companies that specialize in developing IoT devices for the healthcare industry, as well as to researchers, particularly in the field of neuroscience, behavioral science, and psychiatry. It may lead to stronger use of Internet of Things (IoT) devices to detect behavioral anomalies and improve effectiveness by taking corrective measures [34].

PS7-4: PS7-4

Chair: Panita Rachapaettayakom (Mae Fah Luang University, Thailand)

13:45 ***A comparative Analysis of 1D Convolutional Neural Networks for Bearing Fault Diagnosis***

Aydil Jomaa Bapir (Duhok Polytechnic University, Iraq & Firat University, Turkey); Ilhan Aydin (Firat University, Turkey & Firat, Turkey)

In many industrial applications, bearing monitoring is ranked as a crucial duty for condition-based maintenance. It enables the avoidance of unplanned maintenance while lowering the cost. For this objective, a variety of strategies have been devised to assure accurate and effective monitoring. This study offers a One-Dimensional Convolution Neural Network (1D-CNN) that is used to diagnose and identify early bearing faults based on Variational Mode Decomposition (VMD). Methods such as VMD-based feature extraction for defect detection are followed by multi-scale feature extraction for classification and diagnosis using CNN and pooling layers. Bearing fault detection and diagnosis are evaluated using the Case Western Reserve University experimental dataset to determine its robustness and performance. Demodulation techniques and machine learning algorithms are also contrasted for their ability to identify and diagnose the fault. A VMD filter and 1D-CNN approach for monitoring bearing fault are clearly promising, according to the results obtained from the experiments.

14:05 ***Preprocessing Trajectory Learning Techniques For Robots: A comparative study***

Asmaa A. E. Osman (Faculty of Computers and Artificial Intelligence Cairo University, Egypt); Reda Abd Elwahab and Mahmoud Shoman (Cairo University, Egypt); Mohamed A. Wahby Shalaby (Cairo University & Smart Engineering Systems Research Center Nile University, Egypt)

Robots are increasingly used in numerous life applications. Therefore, humans are looking forward for creating smart and more productive robots. Developing such robots necessitates the programming of the robot. Hence, the machine learning approaches are widely employed to accomplish this objective successfully. Programming the robot can be applied by demonstration such that the skills are transferred to robots by providing examples of the required behavior. Learning a skill at a trajectory level involves modeling set of demonstrated trajectories and retrieving a generalized representation of the set suitable for reproduction by a robot learner. Traditionally, modeling the demonstrated data was applied on discrete data which would result in learning outcome distortions. In order to overcome such distortions, a preprocessing stage of the raw data is needed. Recently, preprocessing trajectory learning techniques have been proposed. It is found that these techniques can increase the accuracy of the generalized trajectory. In this paper, a comparative study is conducted between these preprocessing trajectory learning techniques in terms of accuracy and the computational cost. It is shown that the generalized trajectory generated by applying the preprocessing learning techniques can increase the accuracy at reduced computational costs in comparisons to related work.

14:25 ***Measurement of Railway Sleepers Spacing Using Mask R-CNN***

Emre Güçlü (Fırat University, Turkey); Ilhan Aydin (Firat University, Turkey & Firat, Turkey); Erhan Akin (Firat University, Turkey)

Railway sleepers are key components that are critical to ensuring safety in the railway track system. Railway sleepers are designed to carry wheel loads from the rails to the ground. This article presents a study to determine the spacing between sleepers. For the detection of sleepers, a model based on Mask R-CNN was developed and used to determine the spaces between sleepers. First, images from the actual railway site were collected by drone and labeled. Next, a model with a Mask R-CNN was built to detect the sleepers. In order to determine the sleepers boundaries, the sum of the pixel density of the binary mask obtained with Mask R-CNN was obtained. Sleepers spans were determined by measuring the distance between the obtained sleepers borders. As a result of the experiment, an accuracy rate of 99.73% was obtained. This work is valuable for detecting sleeper deficiencies and inspecting existing rails, significantly reducing costs compared to traditional methods.

14:45 ***Regression-Based Position Detection for Navigation using IMU***

Orhan Yaman, Beyda Tasar and Oguz Yakut (Firat University, Turkey)

In this study, IMU (Inertial Measurement Unit) data was used and GPS (Global Positioning System) position detection was performed. Fine Tree Regression has been used for position detection. A new dataset has been collected to test the proposed method. The development board has been designed with Arduino mega, Altimu-10 IMU sensor, GPS module, and SD card module. This development board is fixed on an automobile. During the movement of the car, altitude, accelerometer, gyro, magnetometer, latitude, and longitude data have been collected. Obtained data have been used together with Fine Tree Regression. Both latitude and longitude regression results are calculated. Because of regression, latitude, and longitude results have been calculated according to the car's altitude, accelerometer, gyro, and magnetometer data. 0.97 R-Squared for latitude

and 0.98 R-Squared for longitude have been computed with Fine Tree Regression. Obtained results have been compared with other regression models.

15:05 ***EEG Signals Based Motor Imagery and Movement Classification for BCI Applications***

Beyda Tasar and Orhan Yaman (Firat University, Turkey)

The Brain-Computer Interface (BCI) is a system that uses the neural activity data of the brain to control the devices in the outside world, in other words, to communicate. BCI studies of wearable sensor EEG sensor technology have gained momentum. In this study, in order to enable the use of electroencephalogram (EEG) patterns in BCI applications, the extraction of statistical-based features, the selection of the most effective features with the NCA method, and the determination of the type of motion request with classification algorithms were carried out. The PhysioNet EEG Motor Movement/Imagery dataset, which is a large-scale movement EEG dataset (108 subjects, 3,145,160 EEG recordings), was used. For six different types of motion and imaging, 30 statistical features were calculated (960 in total) for each channel of the EEG signals received from the 48-channel EEG sensor head, and the most effective 120 features were selected with NCA. The selected feature set is given as input to the LD, NB, SVM classification algorithms. The test accuracy success of the models is 91.18%, 95.41%, and 99.51%, respectively. These results show that the proposed method will give successful results in BCI applications.

PS7-6: PS7-6

Chairs: Moustafa Mohamad Kurdi (City University & Engineering and Information Technology, Lebanon), Krit Sittivangkul (Mae Fah Luang University, Thailand)

13:45 ***Trajectory and Motion for Agricultural Robot***

Moustafa Mohamad Kurdi (City University & Engineering and Information Technology, Lebanon); Imad Elzein (International University of Beirut, Lebanon)

This paper provides a detailed analysis of the trajectory and motion planning for ground Agricultural-Robot. the approach is based on: i) scanning and analysis of the selected area; ii) obstacle avoidance behavior; and iii) position and image processing system of Agricultural-Robot. The purpose of this paper is to present the goal-directed robot path planning in the presence of uncertainties and obstacles. The proposed concept has been validated on a simulation test bed that is constructed upon a model of typical Agricultural-Robot and race results that clearly demonstrate the effectiveness of the planning system.

14:05 ***Implementing a TSP Path Controller for Autonomous Robot***

Moustafa Mohamad Kurdi (City University & Engineering and Information Technology, Lebanon); Imad Elzein (International University of Beirut, Lebanon)

In this paper the cooperation of hybrid robots with digital map is presented. Based on ground robot Fuzzy Controller is designed to achieve the desired navigation accuracy, to estimate the optimized path. The approach combines Path Controller, Travel Sales Problem and Fuzzy Controller. A combined algorithm is demonstrated on multiple inputs to achieve higher accuracy and efficiency.

14:25 ***Perception and Clustering Analysis towards Cryptocurrency Investment Decision using Machine Learning***

Krit Sittivangkul, Tosporn Arreeras and Sunida Tiwong (Mae Fah Luang University, Thailand)

The objectives of this research are 1) to study the relationship of people interested in investing in cryptocurrencies; 2) to identify people interested in cryptocurrencies. This research study is quantitative research by survey research using an online questionnaire data collection method of 402 respondents. The research results found that Most of them are Generation Z people interested in investing in cryptocurrencies and low to middle-income groups, most of whom are interested in BTC and ETH, the well-known crypto-currency groups. The analysis was then divided by K-Means Clustering analysis into three groups, namely "Not interested in cryptocurrencies", "Moderate-interest" and "Risk-takers" that interested in investing in cryptocurrencies. The

last group has a selection to invest in a variety of cryptocurrencies, especially SOL, BNB, and ADA, which are smart contract coins.

14:45 ***A YOLOR Based Visual Detection of Amateur Drones***

Ilhan Aydin (Firat University, Turkey & Firat, Turkey); Emrullah Kizilay (Firat University, Turkey)

The popularity of Unmanned Aerial Vehicles (UAVs) has increased considerably among today's technologies. In addition to the increase in the use of UAVs, their development as a model has shown a rapid acceleration. Especially in the field of defense technologies, the production of special UAVs is considered as a new power besides the existing systems. It is foreseen that UAVs will make a difference in terms of autonomous capability, their usage areas will become widespread in the recent years and they will operate in many areas. This situation brings many studies in the field of UAV. The proliferation of UAVs brings with it a number of problems. In accordance with current laws and regulations, UAVs are used in certain standards and areas. However, contrary to this situation, UAVs are also used outside of laws and regulations. Therefore, detecting UAVs in this situation is very important task. In this study, the recently released YOLOR was used to detect UAVs. As a result of the experiments, it has been experimentally proven that the YOLOR model has a 95.9% success rate and is better than other object detection models.

15:05 ***On Campus Student Recruitment Analysis using Machine Learning***

Varsha T and Yamuna C Shekar (M S Ramaiah University of Applied Sciences, India); Sahana Shankar (Ramaiah University of Applied Science, India); Naresh E (M S Ramaiah Institute of Technology, India)

College is one of the non-profit company which aims to provide support to all student needs, to develop science especially in academic field. So, providing good placement assistance service has become one of the benchmark for a qualitative college environment. Now a days, in this pandemic hit world, most of the IT companies are recruiting students through online mode which would be burdensome for the college as well as for the company to shortlist the students based on the companies requirements for various roles. It takes a lot of manual effort to complete the recruitment process as college contain thousands of students. So, in order to overcome this problem, a new technique for evaluating job applications in online recruitment systems, by applying different machine learning algorithms to solve the problem is proposed. An application is being implemented in the form of a prototype system, whose functionality is manifested and accessed in a real-life recruitment scenario. A system can be proposed where the machine takes the student's performance as well as company's requirements as input, analyze both and provide information whether the student should be shortlisted for interview. This paper proposes an automated solution for the student recruitment analysis using machine learning techniques.

PS7-9: PS7-9

Chair: Sawsan Hilal (University of Bahrain, Bahrain)

13:45 ***Rail Tracking and Detection with Drone in Gazebo Environment***

Mehmet Sevi (Muş Alparslan University, Turkey); Ilhan Aydin (Firat University, Turkey & Firat, Turkey)

Rail transport is considered one of the safest modes of transport. Along with the development of technology, significant developments have been observed in railway transportation over the years. With the increasing railway line, the demand for railway transportation is increasing day by day. The number of passengers using railway transportation has also increased in this context. With this intensity, the damage to the railway line increases. In ensuring the safety of railway transport, methods based on deep learning have become important to ensure railway safety. In order for the railway line to provide healthy service, the monitoring of the railway line should be done regularly. Traditional rail monitoring services require different vehicles. Today, besides conventional vehicles, drones are used for the monitoring of the railway line. Experimenting with drones in the real environment can be difficult and costly. It is always more advantageous to run the codes that will run on the drone first in a simulation environment to save time. In this study, a drone-based system that autonomously tracks and detects railway tracks is proposed as an alternative to traditional methods. The proposed method detects the rails with the semantic segmentation method and follows the rails with its front camera. The proposed method was developed in the Gazebo environment. The general purpose of the study is to record the rail images with the drone camera that follows the railway autonomously. In this way, drone

experiments to be carried out in the real railway environment will be completed in a shorter time.

14:05 ***UReST: A Knowledge Based Usability Requirements Specification Support Tool***

Chian Wen Too, Meei Hao Hoo, Kok Chin Khor and Whee Yen Wong (Universiti Tunku Abdul Rahman, Malaysia)

Despite the importance of identifying and specifying a complete set of usability requirements in the early stage of software development, there are few methods and tools that adequately support the requirement engineers in the process of eliciting and specifying relevant usability requirements. This paper presents UReST, a knowledge-based usability requirement support tool aimed at empowering the requirement engineer with knowledge repository and predefined structured template that aids in performing their task to capture and specify relevant usability requirements during the requirement gathering. A controlled experiment and usability study have been conducted to evaluate the effectiveness of the UReST in supporting the requirement engineer to perform usability requirement specification activities. The results from both experiment and usability study concluded that UReST could support the requirement engineer to identify and generate more usability requirements relevant to a domain functionality. Nevertheless, the developed UReST also received high acceptance level of usefulness and ease of use in the usability study.

14:25 ***Bleeding Region Segmentation in Wireless Capsule Endoscopy Images by a Deep Learning Model: Initial Learning Rate and Epoch Optimization***

Ratchaneekorn Duangchai and Chanakarn Toonmana (Srinakharinwirot University, Thailand); Kawee Numpacharoen (Georgia Institute of Technology, USA); Amber Charoen (Brown University, USA); Nuwee Wiwatwattana and Theekapun Charoenpong (Srinakharinwirot University, Thailand)

Gastrointestinal bleeding is a common symptom in gastrointestinal tract, which can lead to serious conditions. The neural network algorithm is used to segment the bleeding region in Wireless Capsule Endoscope image. Initial variable is also importance for performance of the algorithm. In this paper, we proposed a bleeding segmentation method by using a deep neural network algorithm. Variables which effect on performance of the deep learning technique in training process are studied. Initial learn rate is varied from 0.009, 0.006, 0.003, 0.06, and 0.09. Epoch is varied from 1,000 to 10,000 iterations. To test the performance of segmentation method, 48 Image in KID dataset were used in the experiment. DICE rate of is 90.82%, and 69.91% for training data and test data, respectively. Based on the experiment, initial learning rate, and number of epoch effects to the performance of the method.

14:45 ***Machine Vision System of Emergency Vehicle Detection System Using Deep Transfer Learning***

Kim Carol D. Maligalig (Batangas State University, Philippines)

Accidents can happen at any time and in any location, so emergency vehicles are essential in any emergency or life-threatening circumstance. However due to lots of people owning cars, traffic jam is a severe problem in many cities. These traffic jams have an impact on emergency vehicles, particularly ambulances, as well as other vehicles such as fire trucks and police cars. The purpose of this research is to develop an emergency vehicle detection system that will assist law enforcement in mandating traffic when emergency vehicles are on the road. The researcher use deep learning, specifically YOLov3 technique in developing the detection system wherein it will utilize CNN in implementing. The highest mAP value out of 25 models was obtained by the detection system is 98.78% by model 21.

15:05 ***A Transfer Learning-Based System of Pothole Detection in Roads through Deep Convolutional Neural Networks***

Jhon Michael C Manalo (Batangas State University, Philippines)

Pothole detection is a critical role in defining optimal road management solutions and maintenance. In this study, the researcher used deep learning and yolov3 to create a pothole detection system. A deep learning algorithm called YOLOv3 is used to develop a model that can successfully identify potholes. The detection model had an average precision of 95.43 percent, and identified potholes had accuracies ranging from 33 percent to 69 percent, which is to be anticipated given the numerous various forms and sizes of potholes

PS7-7: PS7-7

Chairs: Ling Suan Choo (University of Bahrain, Bahrain), Kiki Khoifin (Mae Fah Luang University, Thailand), Nattapan Kongbuamai (Mae Fah Luang University, Thailand)

13:45 ***Predicting Customer's Subscription Response to Bank Telemarketing Campaign Based on Machine learning Algorithms***

Saad Ebrahim Saeed, Mustafa Hammad and Abdulla Alqaddoumi (University of Bahrain, Bahrain)

The cut-throat competition in the banking industry has led to the paradigm shift of banking strategies from conventional methods towards state-of-the-art data mining and machine learning techniques. Over the years, the banking industry has shifted from personal individual visits towards telemarketing which is an effective and cheaper way of carrying out marketing campaigns through telecommunication. However, the banks are always seeking new methods and techniques to help them advertise the selected products to the interested customers in order to minimize the time and cost spent on marketing with a maximum number of customers subscribing to the new products, consequently increasing their profit value. This paper attempts to provide the banks with a data mining solution to predict the customer's response to the telemarketing campaign using an ensemble classifier based on hybrid machine learning models. A thorough Exploratory Data Analysis (EDA) is also performed to give useful insights about the customer's attributes leading to a higher subscription rate. Our ensemble classifier caters to the class imbalance problem in the dataset and predicts the customer's response with an accuracy of 95.6%.

14:05 ***Action Research on Online Business Performance of a Chinese Sport Equipment Company: A Conceptual Paper***

Poh-Chuin Teo and Theresa C.F. Ho (Universiti Teknologi Malaysia, Malaysia); Ling Suan Choo (University of Bahrain, Bahrain); Zeng Shuohan (Fingerprint Cards AB, China); Beni Widarman Yus Kelana (Universiti Teknologi Malaysia, Malaysia & Azman Hashim International Business School (AHIBS), Indonesia)

This conceptual paper proposes an action research project focuses on improving Company S online business performance, with the primary objectives of increasing online sales and improving customer satisfaction. Aim to identify critical aspects of e-commerce and feasible online marketing strategies that can increase sales for companies considering entering e-commerce, particularly inexperienced newcomers. The study proposed a mixed-method research, whereby data has been proposed to be collected via interviews and surveys using both qualitative and quantitative methods. Data triangulation has been recommended in analyzing the data and developing potential intervention strategy, which would help in improve the problem that is facing by the studied company.

14:25 ***Improving Purchase to Pay Process Efficiency with RPA using Fuzzy Miner Algorithm in Process Mining***

Rizal Broer Bahaweres (UIN Jakarta - IPB University, Indonesia & Computer-iEEE, Indonesia); Habib Amna (UIN Syarif Hidayatullah Jakarta & UIN, Indonesia); Desi Nurnaningsih (University of Muhammadiyah Tangerang, Indonesia)

Robotic process automation is a solution for automating human digital interactions to increase efficiency and reduce costs. We analyze the possible solutions of Robotic Process Automation (RPA) in the purchase to pay process dataset to measuring efficiency using process mining methods. We investigate 10% of 1,595,923 event logs and found that there was still a lack of automation in the purchase to pay process. Process mining will examine repetitive activities in purchase to pay process and discover analysis of vendors in a month, it was found that the use of automation was 4.5%, 3.72% and even 0% which should have been a repetitive process that could have been replaced with robots. The author analyzes purchase to pay data from the large multinational coating and paint companies in the Netherlands from BPIC 2019. The main motivation is to make the purchase to pay process more efficient so as to improve company performance by utilizing the application of RPA in terms of productivity, cost, speeds and error reduction.

14:45 ***An investigation of factors affecting purchasing decision of premium coffee in Singapore***

Nattaphon Rangsaritvorakarn (Mae Fah Luang University, Thailand); Suthep Nimsai (Mahidol

University, Thailand)

This study aimed to analyze the customer purchasing decision within premium arabica coffee shops in Singapore. The sampling locations were Singapore. The population used in the study consisted of 312 valid responses from 16 coffee shops. The data was obtained by using questionnaires which consists of 17 questions according to marketing mix concepts, including four product items, three pricing items, four-place items, three promotion items, and three people items. The data analysis was used the grey theory system with GM(0, n) which estimates the decision of an uncertain system by examining the relationship between model construction and discrete data. The results of the study revealed five factors of marketing mix were impacted customer purchasing decisions significantly. The product elements weighting is 0.3527. Follow by, the price (0.2712), the place (0.1581), the promotion (0.1296), and the people (0.0897). The study found that Singaporean focus on premium coffee beans that have a unique flavor. Especially storytelling for each country of origin where to plant premium coffee is even more interesting and gives a new experience different from instant coffee. In addition, consumers are also willing to pay for what's right for the price even premium coffee has a high price.

15:05 ***A comprehensive study of Natural language processing Techniques Based on Big Data***

Mouad Banane (University of Hassan II, Morocco); Allae Erraissi (Chouaib Doukkali University, El Jadida, Morocco)

Natural Language Processing (NLP) is a branch of artificial intelligence that focuses on understanding human language as it is written and/or spoken. To do this, specific computer programs are developed. NLP algorithms practice different syntactic and semantic analyzes to evaluate the meaning of a sentence according to grammatical rules provided beforehand, by operating a segmentation of words and groups of words or by studying the grammar of a complete sentence. To determine the meaning and the context, they compare the text in real time with all the databases at their disposal. Needing large amounts of data to identify relevant correlations On the other hand, Big Data offers a revolution in massive data management systems thanks to a set of evolving technologies like NoSQL and, Spark. In this paper, we present a comprehensive study of natural language processing (NLP) techniques based on Big Data technologies, then we compare these NLP techniques in order to show the advantage of using Big Data for the management of massive NLP data

PS7-5: PS7-5

Chair: Teeris Thepchalerm (Mae Fah Luang University, Thailand)

13:45 ***Consumer Decision Aid and Purchase Perception for In-store Shopping***

Siti Aqilah Matajudin, Wardah Hakimah Sumardi and Muhammad Anshari (Universiti Brunei Darussalam, Brunei Darussalam)

Purchase abandonment is a common problem for businesses since it translates to loss of sales and loss of potential customers. A review of the literature suggests that there is yet a study on in-depth exploration of purchase abandonment in in-store shopping. Hence, this study aims to examine the nature of product abandonment in in-store shopping, explore the factors that influence purchase abandonment in in-store shopping, and understand how the difference in the features of product categories affect purchase abandonment in in-store shopping. This qualitative study involved in-depth interview with consumers and the data was thematically analysed. The findings of this study provided new definitions for purchase abandonment in in-store shopping where the definitions differ in terms of the formation of purchase intention, and uncovered additional factors that lead to purchase abandonment in in-store shopping that were not identified in previous studies. This study also revealed how product abandonment differs across product categories where specialty products are more likely to be abandoned than convenience products and shopping products due to the perception that specialty products are usually not a 'need' product and that specialty products are expensive.

14:05 ***Factors Influencing the Transition of Entrepreneurial University***

Tippawan Meepung (King Mongkut's University of Technology North Bangkok (KMUTNB) Bangkok, Thailand); Prachyanun Nilsook (Faculty of Industrial Education, Thailand); Panita Wannapiroon (King Mongkut's University of Technology North Bangkok, Thailand)

Population is the personnel working in higher education institutions in Thailand, The research methodology is survey research using quantitative research methods. A descriptive research methodology was used, and questionnaires were used as a tool to collect data using a sample of 300 higher education personnel. Sampling by Cluster Sampling. used statistics on Frequency distribution of data by percentage Arithmetic mean standard deviation inferential statistical analysis. Statistics were used for analysis with Confirmatory Factor Analysis (CFA). Which found that the relative chi-square value (CMIN/DF) is equal to 1.236, Compliance Index (CFI) is equal to 0.998 which greater than 0.90 and CFI value (Comparative. Fit index), the measure of the suitability level based on the criteria (NFI) is equal to 0.992, which is greater than 0.90, the roof index of the square mean of estimation of the error (RMSEA) is equal to 0.028 which is less than 0.08.

14:25 *Performance Evaluation of Time Series Forecasting Methods in The Stock Market: A Comparative Study*

Fares Abdulhafidh Dael and Uğur Yavuz (Ataturk University, Turkey); Akram A. Almohammedi (South Ural State University, Malaysia)

Stock market forecasting is a challenging area for many researchers and investors since it is a stochastic environment. The aim of this paper is to apply some of the existing forecasting methods to find the optimal method that gives high accuracy based on the given data. IBM stock market dataset has been used for this paper. Ten years of numerical collected data have been applied for training and testing. Eight forecasting methods have been tested which are Linear Regression, Multilayer Perceptron, RBF Regressor, SMO reg, Bagging, Random Sub Space, Timeseries Holt-Winters, and Random Forest. Python and Weka tools have been used for processing, analyzing, and testing. SMO regression has shown an excellent performance compared to the other applied methods in IBM stock market forecasting. The outcome of this paper will help the investors to take the right decision for selling, holding, or buying in the stock market.

14:45 *The Role of Financial Decision-Making on Energy Consumption in ASEAN Countries*

Aliya Isiksal (Near East University, Faculty of Economics and Administrative Sciences, Turkey); Ala Fathi (Near East University, Turkey)

By using panel data from 1998 to 2018, this study examines the impact of five important factors influencing sustainable energy use in ASEAN countries, including technological innovation, financial expansion, economic freedom, pollution of the environment, and per capita GDP. The PMG-ARDL analysis method was applied to generate a dynamic heterogeneous panel to test the panel data. Then, to establish successful policies, the Dumitrescu-Hurlin panel causality test was applied. The results show that fiscal expansion has a significant impact on reducing the use of sustainable energy. Moreover, environmental degradation, economic freedom, and real GDP per capita have a negative relationship to the use of sustainable energy, although there is a positive relationship between innovation and sustainable energy. According to the findings, ASEAN countries have to strengthen measures that encourage sustainable energy projects to maintain their economic strength for a long period. They will also be able to prevent future economic crises and will have alternative energy sources to draw on in case conventional energy runs out.

15:05 *A study of heuristics and cognitive biases affecting the decision-making of inventory management for drugstores*

Narucha Tanaiutchawoot (Lecturer in University & Manager of Science Park in Technopolis, Thailand)

Heuristics have a significant impact on many entrepreneurs' decisions since they typically make decisions under uncertain conditions, time constraints, and little information. Inventory management is one task that necessitates several judgments. Overstock or inadequate supply to meet demand can result from an imbalance in selling and ordering. In inventory management, heuristic decisions are unavoidable, which can lead to cognitive biases in decision-making. The purpose of this study is to investigate and identify eight heuristics and cognitive biases that may occur in the decision-making process of a drugstore entrepreneur regarding inventory management. Overconfidence bias, planning fallacy, representativeness heuristic, regret and counterfactual thinking, escalation of commitment, illusion of control, anchoring heuristic, and the affect heuristic are all typical cognitive biases in entrepreneurial decision-making. The experiments were carried out through face-to-face interviews with 60 participants who have been running the firm for more than a year. The findings revealed that entrepreneurs occasionally make decisions based on heuristics and cognitive biases. The affect heuristic, the planning fallacy, and overconfidence all emerge more frequently than others. Because entrepreneurs have greater knowledge and experience, regret and counterfactual reasoning, as well as escalation of commitment, rarely influence their inventory management decision-making. These findings show that some heuristics may be addressed as knowledge and experience grow. However, it is not required to avoid them because they

may occasionally be advantageous in certain conditions, such as responding to client needs on time even if the aim exceeds the plans.

PS7-8: PS7-8

Chair: Ayman Al-khazraji (University of Bahrain, Bahrain)

13:45 ***Investigating the critical human behaviour elements and their implications for knowledge management systems: A Literature Review***

Wan Noor Aziela Isma (Universiti Teknologi Mara, Kota Bharu); Mohd Nasir Ismail (Universiti Teknologi MARA Cawangan Kelantan, Malaysia); Mohamad Rahimi Mohamad Rosman (Universiti Teknologi MARA, Malaysia)

A knowledge management system is required to ultimately enable an organization to realize its knowledge management objectives. The organization has several issues with this system, including deciding whether to adopt it or not, and, in the latter case, whether users would accept working with it. This study aims to determine the impact of human behavioural factors (HBFs), such as emotion, on group processes, as well as the impact of these processes on individuals' attitudes and emotions, character, values and beliefs, perspective and motivation, and knowledge management system-cycles (KMS-Cs). In addition, knowledge management systems are adopted at both the organizational and individual levels. Many factors influence an organization's decision to adopt knowledge management systems, including corporate culture and top management support. Various circumstances also influence users' acceptance, and naturally, the amount of acceptance affects the knowledge management system's effectiveness. Although an effective knowledge management system (KMS) is a critical strategy for organizations to obtain sustained competitive advantages, little research has been undertaken to determine what factors contribute to the success of KMS.

14:05 ***A Review: Female's Career Advancement to An Executive Position in The Service Industry***

Pinpinut Phatthanaaoran, Chanakarn Kongsomrarn, Chutima Sangkaho, Arisa Promlar and Tosporn Arreeras (Mae Fah Luang University, Thailand)

In the 21st century, global females have faced unequal promotion because of gender. Even they are qualified or deserve to be promoted. Compared with males, they are offered and engaged in both authorizations and opportunities in their occupations. This phenomenon is called the glass ceiling used as a phase for comparison. It has been an assemblage of masculine norms in organizations. Most articles and research in the glass ceiling areas concern an overview. Interestingly, the service industry that is outstanding in female employment can also be an incident of the glass ceiling. This research aims to understand problems and solutions better to offer a new approach for future research in the field. For methodology, bibliometric and categorization are chosen to analyze and review 110 existing pieces of research about women and executive positions in the service sector. As a result, it will provide helpful information for the researchers interested in female vertical segregation and the organization in the service industry that tries to develop a corporate social responsibility strategy for female employees and gender equality.

14:25 ***Critical Review of Design Considerations in Forming a Cloud Infrastructure for SMEs***

Lai Yen Ling (Asia Pacific University (APU), Malaysia); Muhammad Ehsan Rana (Asia Pacific University of Technology & Innovation, Malaysia); Qusay Al Maatouk (Staffordshire University, United Kingdom (Great Britain))

Cloud based solutions provide a robust and flexible approach to support and improve the digital businesses for better success. This study is focused on the need analysis for the Small-to-Medium Enterprise (SME) companies for the perspective of finding the most suitable and appropriate cloud strategies to obtain the best outcome. Various aspects included in the design of the cloud solution such as scalability, cost-effectiveness, performance and efficiency are discussed. The essential components of the cloud infrastructure framework such as applications, services and orchestration are also explored. Finally, authors have proposed an infrastructural framework focusing on the virtual layer, control layer and orchestration layer of the Cloud.

14:45 ***Prioritization of the Potential Sectors for CO2 Emission Reduction based on International Policies: A Case of Turkey***

Fatma Gündoğdu (National Defence University, Turkey); Esra Ilbahar, Ali Karasan, İhsan Kaya and Bestami Özkaya (Yildiz Technical University, Turkey)

Day by day, with the increment in the world's temperature, the ways of reducing greenhouse gas emissions (GHGE) have been started to be investigated more to slow down this process. To create a sustainable action plan and a road map, the governments and the international agencies have been started to take steps. Based on this aim, United Nations (UN) determined the most effective factors on GHGE with respect to their possible reduction amounts to take action. On the other hand, the world bank identified related indicators of GHGE for the governments to create their individual agendas to work for a sustainable and affordable environment and city plans. This study proposes an integrated decision-making methodology consisting of spherical fuzzy TOPSIS and fuzzy inference system (FIS) for prioritizing the pre-determined sectors with respect to CO2 emission reduction based on the climate change indicators . The spherical fuzzy TOPSIS method is used to obtain input data of the FIS by considering the distance to ideal solutions of the evaluated sectors for Turkey. Through the application, it is obtained that Transport, Energy, and Industry sectors are determined as the most effective against the CO2 reduction based on the current ecosystem of Turkey. Since Turkey is a developing country and one of the G20 countries, its current focus areas are mainly increasing productivity considering high-level technologies, the supplement of inadequate and sufficient energy for both the industry and the householders, and investments in infrastructure for a better and faster transformation. Considering these aspects, the country's primary investments areas are on industry, energy, and transportation to reach a better place considering the annual gross domestic product. Therefore, the obtained results are quite applicable and meaningful, and this study can be a good starting point for further actions.

15:05 ***An IoT-Based Framework to Support Decision Making Process Using Quality Function Deployment***

Venu Parameswaranpillai and Ayman Al-khazraji (University of Bahrain, Bahrain)

This paper proposes a framework to incorporate a smart module to a refrigerator capable to collect product data from the items kept inside for refrigeration. This data is collected with the help of smart devices and provide an interface for the users to input product feature rating or innovative requirements to the company involved in making the product. The customer input travel to a QFD interface that uses modern algorithms to act as a dynamic deployment platform to support the decision makers to initiate the product improvement activities. This framework can be implemented in smart refrigerators to help the customers understand the product under use, compare the one they are consuming or using with similar other products, recommend product improvement features and get in touch with the company to continuously push the feedback. The companies could make use of this platform to customize their product to suit customers of diverse nature, tackle regional competitions and always stay flexible to make necessary product improvement that meets the customer needs.

Friday, March 25 15:25 - 15:35 (Asia/Bangkok)

Break: Coffee Break

Friday, March 25 15:35 - 17:15 (Asia/Bangkok)

PS8-4: PS8-4

Chair: Meryem Masmoudi (University of Bahrain, Bahrain)

15:35 ***Compact Tag Antenna Loaded with Metamaterial for IoT-Based Personal Healthcare in Hospital Services***

Abdessalam EL yassini (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco); Mohammed

ali Jallal (Cadi Ayyad University Faculty of Sciences Semlalia, Morocco); Saida Ibnyaich (Faculty of Sciences Semlalia, Cadi Ayyad University Marrakesh, Morocco); Zakaria El Ouadi (Cadi Ayyad University, Morocco); Abdelouaheb Zeroual (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco)

The Internet of Things (IoT) technologies are frequently used. Due to the wireless transmission and receiving of the information between each IoT system and distant application, confidentiality and security of data. This paper progresses through the study of radio frequency identification (RFID), which is an important technology and one of the more demanding technologies in the recent wireless systems. A compact multi-band tag has been suggested in this research work for RFID and IoT-based personal healthcare in hospital application. An unit cell of the metamaterial and meander lines are used to achieve multiband operating. The suggested tag has been printed on a low-cost FR4 substrate with εr=4.3, tan δ=0.022, and physical size of 16×23×1.6 mm3. The obtained results have shown that the suggested tag antenna provides significant impedance matching in the operational bands (2.3-2.5 GHz) and (5.78-6 GHz), correspondent of the central frequencies of 2.45 GHz and 5.8 GHz. This tag antenna provides a gain of 2.14 dB and 3.22 dB at both resonant frequencies. Furthermore, this antenna has excellent results and supports two bands of operation for communication devices in the hospital services.

15:55 ***Forecasting FSW Material's Behavior using an Artificial Intelligence-Driven Approach***

Abdelhakim Dorbane (Ain Temouchent University, Algeria); Harrou Fouzi (King Abdullah University of Science and Technology & KAUST, Saudi Arabia); Ying Sun (KAUST, Saudi Arabia)

An effective data-driven approach was developed to forecast the mechanical behavior of an aluminum alloy, namely Al6061-T6, in the case of friction stir welding. Gated current unit (GRU), a deep learning model, was investigated in this study. This is the first study introducing the GRU model to effectively forecast a material's stress-strain curves. The major features of the GRU consist in its capacity to capture time dependency in time-series data and its flexibility as it does not require assumptions of the data distribution. Actual data was collected by conducting uniaxial tensile testing on the base material, and friction stirred welded, both tested at a deformation speed of 10-3s-1. Forecasting tensile tests results showed promising and accurate results of the GRU-driven forecaster.

16:15 ***Outer weighted graph coloring-aided power control for addressing the pilot contamination issue across cellular massive MIMO systems***

Abdelfettah Belhabib (Cadi Ayyad University, Morocco); Zeroual Abdelouhab (cadi ayyad University FSSM, Morocco)

Massive multiple-input multiple-output technology is one of the main pillars of upcoming 5G systems; however, this technology is falling apart due to the problem of pilot contamination. To address this problem, a new decontamination strategy is proposed in this paper. This strategy is based on the exploitation of available information to separate the user equipments (UE) inside the cells into two groups. The first group includes UE that roams around their base station (BS), which explains their name: internal user equipment (IUE), while the other UEs are called peripheral user equipment (PUE). After being separated, the IUEs in each cell are arbitrarily forced to use the same pilots as those in all cells, while the process of assigning pilots to the PUEs is managed using a graph coloring strategy. Therefore, a control power process is employed to improve the QoS of each UE based on its channel condition. Simulation results are used to assess the capabilities of our proposed strategy.

16:35 ***Design and Computation Aid of Command Gains for the Position Control of Manipulator Robots***

Sahar Jenhani (Higher Institute of Information and Communication Technologies, Tunisia); Hassène Gritli (National Engineering School of Tunis & Higher Institute of Information and Communication Technologies, Tunisia); Giuseppe Carbone (University of Calabria, Italy)

There are different types of commands dedicated to solving the position control problem of robotic systems in engineering applications. Such control problem consists in moving the robot from its actual position to a desired one. In this work, we adopt three different types of control laws to control the position of manipulator robots and develop conditions aiding to the computation of the gains of these controllers. First, we adopt an affine PD-based control law designed via the approximated linear dynamic model. Furthermore, we adopt the PD controller with gravity compensation and the PD controller with desired gravity

compensation. Moreover, we use the Lyapunov method and the contraction mapping to determine the condition on the feedback gains ensuring the stabilization of the controlled manipulator robot at the desired position. Finally, as an illustrative example, we adopt a manipulator robot with two degrees of freedom to reveal the effectiveness of different design conditions in solving the position control problem.

16:55 ***A Review On Water Resources Management Modeling Using Operational Research and Decision Aid Sciences***

Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia); Ahmed Frikha (Université de Sfax (ISGI), Tunisia & Institut Supérieur de Gestion Industrielle de Sfax, Tunisia); Francisco Silva Silva (CERIS, Portugal)

General objectives of water resources management models are to optimize the utilization of available water resources to meet the demand of as many users as possible. There are different operational research and decision aid (ORDA) sciences of obtaining an optimal allocation or selection of available water to one or various user groups. In this paper, a background of ORDA are presented with different applications in the management of water resources

PS8-5: PS8-5

Chair: Tosporn Arreeras (Mae Fah Luang University, Thailand)

15:35 ***Comparative study between EMD, VMD, SAGE, CLEAN, and ESPRIT-TLS algorithms for real-time fault bearing recognizing detection in induction machines***

Pascal Dore (LABTIC-ENSAT, Morocco); Saad Chakkor (University of Abdelmalek Essaâdi & LabTIC ENSA de Tanger, Morocco); Ahmed El Oualkadi (Abdelmalek Essaidi Unversity, Morocco)

Real-time monitoring of electromechanical faults is today at the heart of scientific research in the industrial sector. Indeed, the idea of this work is therefore to show, through a comparison based on performance indicators (precision, calculation time, occupied memory size, and convergence), which the processing algorithm of the signal is more robust in detecting the spectral characteristics of a fault using the MCSA method (Machine Current Signature Analysis). To do this, we used indicators such as NMSE to calculate the estimation errors on the estimated frequencies of the faults by these algorithms. The MATLAB simulations of the detection of a bearing fault, known by its spectral characteristics (two, four and six harmonics) and injected into a stator current signal with a variable level according to SNR, showed that the ESPRIT-TLS method exceeds the VMD, EMD, SAGE, and CLEAN algorithms and occupies the first place in the precise discrimination of this type of fault, especially when its amplitudes are low and even when close frequencies are used.

15:55 ***Pilot Sequence-based Channel Estimation in Massive MIMO wireless communication networks under strong Pilot Contamination***

Jamal Amadid and Zakaria El Ouadi (Cadi Ayyad University, Morocco); Layla Wakrim (ISGA, Marrakech, Morocco); Asma Khabba and Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

This work provides a straightforward channel estimator to overcome an unrealistic property provided by Minimum Mean Square Error Estimator (MMSEE) for Multi-Cell (MC) Massive Multiple-Input Multiple-Output (M-MIMO) systems operating under Time-Division Duplex (TDD) protocol. Besides, this work is in purpose to study and analyze the current ideal Least-Squares Estimator (LSE), the current ideal MMSEE, and the Maximum Likelihood Estimator (MLE) under various circumstances and considering under Pilot Contamination (PC) problems. This work compared and evaluate the performance of the studied estimators using the metric Mean Square Error (MSE). The traditional LSE provides the worst performance under a high interference level since it is considerably affected by PC. In spite of the greater accuracy achieved by MMSEE in many studies in the literature. However, the MMSEE is relying on an unrealistic assumption, which can be explained by the complete knowledge of among cell large-scale fading (LSF) coefficients as an unrealistic hypothesis in practical use. The suggested estimator (i.e., the MLE) is introduced to overcome the unusable property on which the MMSEE is based. Besides, the MLE is introduced to provides higher performance than LSE. Furthermore, we investigate a scenario of LSF coefficient (i.e., a LSF depends on the distance at which the user is

located from its serving Base Station (BS)), wherewith we assert our analysis. An analytical, simulated, and approximated, results are provided for MLE to affirm our study, whereas analytical and simulated results are given for both LSE and MMSEE to assert the presented theoretical expressions

16:15 ***Performance of Massive MIMO Systems Considering Three Dimensional Array-based Spatially Correlated Channel***

Jamal Amadid and Asma Khabba (Cadi Ayyad University, Morocco); Layla Wakrim (ISGA, Marrakech, Morocco); Zakaria El Ouadi and Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

This work deal with the uplink phase of the pilot-based channel estimation (CE) process for a Massive multiple-input multiple-output (M-MIMO) network operating under the time-division duplex protocol and considering spatially correlated channels. Additionally, this work investigates and examines uncorrelated channels and correlated channels. In addition, the channels's spatial correlation is investigated using two models, namely, the local scattering model (LSM) and the exponential correlation model (ECM), where each model is examined for two array configurations (i.e., uniform linear array (ULA) and uniform planar array (UPA)). Furthermore, we propose a UPA configuration for each model based on the Kronecker product (KP) of the ULA arrangement, i.e., we propose the ECM and LSM for the UPA arrangement, respectively, based on the KP and using either the ECM or the LSM for the ULA arrangement. A comparison and evaluation of these models and their influence on the CE process for a M-MIMO network is analyzed. Numerical results are offred to assert our theoretical expressions

16:35 ***High Gain Double U-shaped Slots Microstrip Patch Antenna Array For 28GHz 5G Applications***

Asma Khabba (Cadi Ayyad University, Morocco); Layla Wakrim (Higher Institute of Engineering & Business (ISGA), Morocco); Zakaria El Ouadi, Jamal Amadid and Saida Ibnyaich (Cadi Ayyad University, Morocco); Zeroual Abdelouhab (FSSM, Morocco)

This research work is devoted to propose and investigate a new millimeter wave antenna array in the 28 GHz band for the fifth generation (5G) of the mobile communication systems. For this purpose, a modified patch antenna with double U-shaped etched slots is presented and employed to propose high gain 5G antenna array. The suggested array is composed of two radiating elements excited by a microstrip feed line and placed on the RTRogers 5880 laminate. An attractive performance is noted where the proposed array combines the most required features including the small size property, wideband operating of 2GHz (27.5-29.5 GHz), high efficiency up to 93% and high improved gain up to 12dB. The attained results proved the eligibility of the antenna to be a good contender for the 5G applications at 28GHz.

16:55 ***Compact Microstrip Filtenna Designed For Wireless Local Area Network Applications***

Zakaria El Ouadi, Jamal Amadid and Asma Khabba (Cadi Ayyad University, Morocco); Abdessalam EL yassini (Cadi Ayyad University Faculty of Sciences, Semlalia, Morocco); Saida Ibnyaich and Abdelouahab Zeroual (Cadi Ayyad University, Morocco)

A small filtering patch Antenna is presented in this work, it consists of a bandpass filter integrated with a monopole radiating antenna. Utilizing Defected Microstrip and Ground Structures (DMS, DGS), a slot is implemented in both the patch and the ground. The bandpass filter is made up of half-wavelength and dual-stub resonators. This filtenna (filtering antenna) is designed for WLAN applications, and operates in the 5.15-5.35 GHz frequency range, with 5.22 GHz is the resonant frequency. The structure is implemented on a compact size of 34,8×27,08×1,6 mm3 equivalent to an electrical dimension of 0.60λ0 ×0.47λ0 × 0.027λ0, where λ0 is the resonance frequency's free-space wavelength. The simulation software used is ANSYS HFSS, which is based on the finite element method. In the E-plane, the filtenna has a bidirectional radiation pattern, while in the H-plane, it has an omnidirectional radiation pattern. A high selectivity, good reflection coefficient, and an excellent VSWR were attained in this work.

PS8-3: PS8-3

Chair: Teeris Thepchalerm (Mae Fah Luang University, Thailand)

15:35 ***Predicting ASD Using Optimized Machine Learning***

Shaikhah Almana (University of Bahrain, Saudi Arabia); Mustafa Hammad (University of Bahrain, Bahrain)

Autistic Spectrum Disorder (ASD) is a neurodevelopmental disorder that affects the development of cognitive abilities, social-communicative skills and shows restricted or repetitive behaviors and interests. An earlier diagnosis of ASD reassures those specialized interventions that optimize children's long-term outcomes are accessed and met. Using a machine learning prediction model that can predict whether an individual has ASD at earlier ages can have multiple advantages. This paper Analyzes ASD datasets for children, adolescents and adults using NBC, KNN and LR. A 10-fold cross-validation method is used to evaluate the models with the three datasets. After that, the Attribute selection method is used to cut down the features using Info gain evaluator. Lastly, two ML models is stacked using the vote stacking technique to be evaluated. This paper is done with the aim to optimize predicting ASD using Autistic-Spectrum Quotient.

15:55 ***Median filter for denoising MRI: Literature review***

Sabrine Limam Chalghoumi (University of Tunis, Tunisia)

The disease of the century, Alzheimer's disease, which characterized the loss of various abilities such: cognitive, thinking, remembering, reasoning and behavioral. One of the tools to recognise an early detection of Alzheimer's disease is medical imaging and the most utilised is the Magnetic Resonance Imaging (MRI). It is a grey colour image with intensity in the range 0-255. Medical image segmentation helps us to pull out precious knowledge from a large quantity of medical image data. For better image segmentation, further phases must be processed. Like, reducing noise from MRI. Gaussian noise and Salt and pepper noise are examples of noises present in images. There are many denoising techniques, like the filtering domain and especially the median filter that proves its effectiveness in reducing the Salt and pepper noise. In this paper, we study Alzheimer's disease, noise in MRI, the Median filter and state of the art in this domain.

16:15 ***Measuring Accuracy Towards Facial Video Heart-Rate Estimation Using Haar-cascade and CNN Method***

Nur Arifin Akbar (University of Murcia, Spain); Amgad Muneer (Universiti Teknologi PETRONAS, Malaysia); Shakirah Mohd Taib (Universiti Teknologi Petronas, Malaysia); Suliman Mohamed Fati (Prince Sultan University, Saudi Arabia)

COVID-19 leads us to have a social distancing even for health-treatment. In this study, we attempt to estimate heart rates in humans using camera-based remote photoplethysmography (rPPG) methods, which are named after conventional PPG methods. The basic concept is focused on capturing minute variations in skin color during the human body's cardiac cycle, which involves the inflow and outflow of blood from the heart to other body parts. We have compared the performance of different methods of Blind Source Separation and face detection which form an integral part in accurately calculating the heart rate. Purpose: The purpose of this method was comparing the actual heart rate with a tuned parameter of Face Video Heart Rate estimation with CNN and OpenCV HaarCascade. Patients and methods: Videos in the dataset are run through a face detection model to get the region of interest for heart rate calculation. Source signals are converted to frequency domain for filtering and peak detection to obtain heart rate estimates Results: Face segmentation using Convolution Neural Network gives better results than the Haar Cascade OpenCV face detection module, which is as expected. Conclusion: Face segmentation using Convolution Neural Network gives better results than the Haar Cascade OpenCV face detection module. CNNs are slower to detect faces than the Open-CV module. Choosing an ROI by segmenting out facial pixels helped to keep the outliers low and therefore increased the robustness

16:35 ***Visual evoked potential classification support with Convolutional Neural Network and Recurrent Neural Network - A comparative study***

Zineb Cheker (LabTIC ENSA of Tangier University of Abdelmalek Essaâdi & ENSA Tanger, Morocco); Ahmed El Oualkadi (LabTIC Abdelmalek Essaadi University & ENSA de Tanger, Morocco); Saad Chakkor (LabTIC, ENSA of Tangier, University of Abdelmalek Essaadi, Morocco)

The analysis of biomedical signals is an interdisciplinary subject, used to develop automatic diagnostic systems for decision support. Among these biomedical signals, we find the VEP: Visual Evoked Potential signals, which are used to analyze the

appropriate functioning of the optical pathways. It is noted that the visual reading, as well as the measurement of the amplitude and latency P100, are used to interpret and analyze this signal in medical diagnostics. However, this technique is not very reliable, because the latency is sensitive to different factors such as stimulation conditions, age, sex, etc. On the other side, we find different cases when some pathological VEPs show a normal latency. In this work, we suggest an automated and accurate classification of Visual Evoked Potential signals, in order to make objective decision support, by proposing an optimized deep learning approach based on the exclusion test using recurrent as well as convolutional neural networks, without any features selection/extraction procedure. To differentiate between the effectiveness of the two architectures examined in our study, we applied training and testing procedures in Matlab. The comparison study findings show that Convolutional Neural Network CNN-1D allows a good accuracy reaching 96% compared to Recurrent Neural Network RNN equal to 88%. This difference is justified by the fact that RNN uses signal values as inputs when CNN has the specificity of calculating features using convolution filters.

16:55 ***Evaluation of the Efficacy of Wolbachia Intervention on Dengue Burden in a Population: A Mathematical Insight***

Afeez Abidemi (Federal University of Technology Akure, Nigeria); Hammed Olawale Fatoyinbo (Massey University, Palmerston North, New Zealand); Joshua Kiddy K. Asamoah (Kwame Nkrumah University of Science and Technology, Kumasi, Ghana); Sishu Muni (Massey University, Palmerston North, New Zealand)

This paper discusses the development and analysis of a nonlinear mathematical model to describe the transmission dynamics and control of dengue disease within the interacting human and mosquito populations. The model, which is governed by a twelve-dimensional system of ordinary differential equations, captures the subpopulation of symptomatic infected human with severe dengue symptoms and \textit{Wolbachia}-infected mosquito population. The dengue-free equilibrium of the model is obtained, and shown to be globally asymptotically stable with respect to the key dengue threshold, denoted by (\mathscr R_0). Numerical simulations are carried out to investigate the effects of \textit{Wolbachia} coverage and fraction of symptomatic infectious humans that will get dengue severe symptoms on the dynamical spread of dengue in the community. The impacts of various \textit{Wolbachia} coverage levels on the disease spread are quantified by carrying out the efficiency analysis.

PS8-6: PS8-6

Chair: Nattapan Kongbuamai (Mae Fah Luang University, Thailand)

15:35 ***Comparative Analysis of Deep Learning Models for Aspect Level Amharic News Sentiment Analysis***

Bekalu Tadele Abeje (Haramaya University, Ethiopia); Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Habtamu Ebabu (Wollo University, Ethiopia); Aleka Ayalew (University of Gondar, Ethiopia)

Nowadays, in the era of social media, customer input and feedback have significant impact on firm's services and products. Companies face a significant challenge in extracting meaningful information from this unstructured, unorganized, massive, and fragmented data. Some research works has been done on Amharic sentiment analysis (AMSA), however none of them have looked at the aspect level by utilizing a deep learning approach. This work focuses on sentiment analysis of Amharic text utilizing aspect level with a hybrid deep learning approach. The dataset was acquired from Amhara Media Corporation's official Facebook page in Microsoft Excel format. Comment exporter software was used to create a dataset of 10,000 in excel format. Different machine learning techniques such as Convolutional neural network (CNN), Long short-term Memory (LSTM), CNN-LSTM and CNN-GRU were used to train and test the dataset. The result of the study shows that LSTM model performed better than other models with training accuracy of 99.10% having a very little difference from CNN-GRU model with 99.08% training accuracy.

15:55 ***A Method for Assessing Effects of Technological Development on Military Capabilities***

Vesa Kuikka and Sami Peltotalo (Finnish Defence Research Agency, Finland)

We present a method to assess the effects of new technologies on the future development of military capabilities. Assessing technologies without any connection to capabilities is insufficient to assist the decision-making of selecting development projects or planning future procurement programs. Instead, a method to connect technologies to capabilities is needed. To this end, we propose a novel evaluation model to help carry out the evaluation process most easily. The evaluation model describes the effects of technological development on military capabilities through the application of different systems. Although our use cases consider military applications, the same questions are present in other fields in the private and public sectors. The focus of this study is to present the method while modelling results are provided only for illustrative purposes.

16:15 ***Information System of Cartographic Images Analysis for Soil Condition Monitoring of Agricultural Parcels***

Viktor Zhukovskyy (National University of Water and Environmental Engineering & Junior Academy of Sciences of Ukraine, Ukraine); Serhii Shatnyi and Nataliia Zhukovska (National University of Water and Environmental Engineering, Ukraine); Jan Perhac (Technical University of Kosice, Slovakia)

The main purpose of environmental monitoring is to manage and minimize the impact of human activities on the environment, to ensure compliance with laws and regulations, or to reduce the risk of adverse effects on the environment and human health. At the same time, we present the system for the automated processing of cartographic data. This system is used as a component of the information-analytical system of organic farming and ensuring the environmental sustainability of soils. In this paper, we described the steps of the design and development of the information system of cartographic images analysis based on the high-level Python language. The graphical method was used for calculating the area of interesting agricultural parcels from a satellite image. The developed image processing system allows us to perform a full range of subtasks required for fast and efficient processing. Comparative results of the speed of the individual stages of processing and analysis are presented as well.

16:35 ***Validation of Secure Wiping Applications for Android Phones***

Luqman Shahzad (Bahria University, Islamabad, Pakistan); Waqas Ahmed (National Center For Cyber Security (NCCS), Pakistan); Safina Naz (Air University, Pakistan); Faisal Shahzad (National Center For Cyber Security (NCCS), Pakistan & Air University, Pakistan); Touseef Sadiq (Universitetet i Agder, Norway)

Identity theft and financial fraud are happening very frequently, and data privacy becomes one of the biggest challenges for Android phone users. Cyber thefts are particularly perceptive when recovering confidential information from user phones after users have deleted/erased their data from phone memory using the factory restore or by using data wiping applications available on Google Play Store and Internet. This research work proposed and developed an efficient data wiping application for Android phones according to the National Institute of Standard and Technology (NIST) SP800-88 Standard of USA. The proposed application is based on the data overwrite technique. It has two layers, data erasing and data overwriting. After erasing the user data from phone memory, it overwrites deleted data locations by three overwrite phases, zeros, ones, and random characters. The data overwrite layer makes deleted data permanently unrecoverable from phone memory. To validate existing wiping applications, we selected the following data wiping applications from Google Play Store: Secure Erase with iShredder-6, Secure Delete, and ShredditData Eraser for data wiping experiments and picked the following data recovery applications and software to validate the above-selected wiping applications: DiskDigger, Dr. Fone, FonePaw and EaseUS MobiSaver for data recovery experiments on following selected Android phones: Samsung Galaxy SM-J600F, Vivo 1908 and Huawei Honor 9-lite LLD- 21 having Android version Oreo 8.0 and 8.1. The experiments result show that the chosen wiping applications are not working according to the standard, and the erased data is recoverable through the above-mentioned data recovery applications and software. On the other hand, data could not be recovered from the phones which are wiped with the proposed framework. We maintained the record of the recovered data from wiped Android phones and proposed an efficient overwrite-based data wiping application for Android phones based on the experiment results. Recommendation: A preinstall secure data wiping application must meet standards such as NIST SP800-88 for complete data erasure and should be available on all android phones for users.

16:55 ***A Survey Paper on Smartphones Data Security, Challenges and Awareness***

Luqman Shahzad and Ejaz Ahmad (Bahria University, Islamabad, Pakistan); Fiza Sohail (Queensborough Community College/CUNY, USA); Touseef Sadiq (Universitetet i Agder, Norway)

Smartphones have now become a vital tool in many people's everyday life, even to the level of addiction for some. Cell phones

are a critical piece of our regular use with the increasing of smartphone, the number of risk of data in smartphone is also increased. This paper provides regarding smartphone security and their vulnerabilities and how to be secure them and data security challenges and awareness about them. Data security on cellphones is a new and developing worry, especially when the data is expensive or sensitive. Despite the fact that there are numerous data protection solutions for cellphones, no research has been conducted. Users' expectations for such solutions We use a different strategy in this study. User-centric approach to the data protection challenge on cellphones, and examine the needs for data protection systems from the perspective of users' viewpoints. We elicit the types of data that users want to keep private. investigate current users' data-protection habits, and demonstrate how the security requirements for various data kinds varies.

PS8-7: PS8-7

Chair: Meriem Youssef (Higher Institute of Finance and Taxation (ISFF), University of Sousse, France & Logistics and Innovation Technology Research Center, IHE Paris, Paris, France)

15:35 ***Metaheuristic Algorithms For Portfolio Selection Problem: An Overview Including Crypto-Assets***

Houda Alaya (BADM Tunis Business School, University of Tunis, Tunisia); Meriem Youssef (Higher Institute of Finance and Taxation (ISFF), University of Sousse, France & Logistics and Innovation Technology Research Center, IHE Paris, Paris, France)

Due to the NP-hard nature of the portfolio optimization problem, a plethora of techniques, such as metaheuristic algorithms have been reported and used in the literature. Their capacity to produce top-quality solutions in reduced computing times makes them a seductive tool for decision-makers (investors, portfolio managers, policymakers...) by supplying real-time solutions. This paper provides an overview of the literature on the use of metaheuristics for solving NP-hard versions of portfolio selection optimization and focuses on their readiness to provide high-quality solutions. In addition, the existing literature including crypto-assets is highlighted. A major finding of this paper is that studies conducted in this specific framework are scarce.

15:55 ***Effectiveness of Deep Learning Long Short-Term Memory Network for Stock Price Prediction on Graphics Processing Unit***

Yakub Kayode Saheed (Al-Hikmah University, Ilorin, Nigeria); Mustafa Raji (Al-Hikmah University, Nigeria)

The stock price is a critical indicator of a nation's economic development. As a result, determining and defining the precise changes of the stock price is highly appreciated. However, because the stock market's complicated and uncertain behavior makes precise forecasting impossible, strong predicting models are very beneficial for the financial decision-making processes of investors. For many experts and analysts, projecting stock prices has proven to be a difficult undertaking. Indeed, investors are keenly engaged in the field of stock price forecasting research. Numerous investors are interested in the future direction of the stock price in order to make a wise and successful investment. Effective stock market prediction systems assist traders, investors, and analysts by giving helpful information such as the stock market's future direction. A unique LSTM model is utilized to predict stock market prices in this study. In order to shorten training and testing time, the suggested model experimental analysis was performed on Graphics Processing Unit (GPU). Data denoising and normalization are used in the data preprocessing. The suggested model was tested using experimental datasets from the S&P 500, NYSE, Nasdaq, and Forbes, and the findings were compared to those of other models. When compared to existing approaches, the experimental findings clearly show improvements in MAE, RMSE, and MAPE with competitive performance.

16:15 ***Goal Programming in Federated Learning: an Application to Time Series Forecasting***

Marco Repetto (University of Milan-Bicocca, Italy); Davide La Torre (SKEMA Business School, France); Muhammad Tariq (Abu Dhabi School of Management, United Arab Emirates)

Large-scale data analysis is growing at an exponential rate as data proliferates in our societies. This abundance of data has the advantage of allowing the decision-maker to implement complex models in scenarios that were prohibitive before. At the

same time, such an amount of data requires a distributed thinking approach. In fact, Deep Learning models require plenty of resources, and distributed training is needed. This paper presents a Multicriteria approach for distributed learning. Our approach uses the Weighted Goal Programming approach in its Chebyshev formulation to build an ensemble of decision rules that optimize aprioristically defined performance metrics. Such a formulation is beneficial because it is both model and metric agnostic and provides an interpretable output for the decision-maker. We test our approach by showing a practical application in electricity demand forecasting. Our results suggest that when we allow for dataset split overlapping, the performances of our methodology are consistently above the baseline model trained on the whole dataset.

16:35 ***VMD-based Multiscaled LSTM-ARIMA to Forecast Post-COVID-19 US Air Traffic***

Hana Rabbouch (University of Monastir, Tunisia); Hayet Saadaoui (SupAgro Montpellier, France); Foued Saâdaoui (King Abdulaziz University, Saudi Arabia)

Accurate traffic flow forecasting is an essential component of the Intelligent Transportation System (ITS). However, existing traffic forecasting methods using deep learning pay little attention to the pandemic's repercussions. This paper proposes a multiscaled deep learning framework called VMD-LSTM-ARIMA, which couples the variational mode decomposition (VMD) algorithm, long short-term memory (LSTM) neural network, and autoregressive integrated moving average (ARIMA) to accurately predict traffic flow time series. Just like any hybrid model, the proposal takes advantages of each one of these approaches, which enhances the performance of the overall forecasting model. Experiments were conducted on a US public traffic datasets, and the results showed that VMD-LSTM-ARIMA effectively increased the prediction accuracy.

16:55 ***The Adoption of E-Commerce by Businesses in Bahrain During Covid-19***

Deena Adel AlHudaib and Minwir Alshammari (University of Bahrain, Bahrain)

E-commerce plays an important and prominent role in the modern era, especially with the continued emergence of new technologies, which opened new horizons for entrepreneurs and business owners of small and medium enterprises to pursue the growth of their business and to expand their scope. Currently, SMEs businesses are no longer limited to practicing their business activities locally but internationally. Digitalization has a vital role in elevating the state of competitiveness between businesses, which in turn prompts many SMEs to acquire technologies that facilitate the business transition to e-commerce in light of gaining a competitive advantage over their rivals in addition to maintaining relevance in their field. This research will further explore the different challenges faced by SMEs in Bahrain during the Covid-19 period and analyze the various obstacles faced during the process of e-commerce adaptation. The research takes into consideration three main categories which are the organizational readiness, environmental readiness, and technological readiness. This study aims to demonstrate SMEs' willingness to transition their business activities to e-commerce after the devastating repercussions of the Covid-19 pandemic. A questionnaire was designed and shared with 110 employees working at SMEs and 100 responses received and selected to be the sample size of the research. The research revealed that SMEs in Bahrain faced many obstacles to transform to e-commerce business during the pandemic and among the obstacles where the financial cost of such transformation. The study provided further recommendation for future studies.

PS8-2: PS8-2

Chair: Muhammad Abrar ul Haq (University of Bahrain, Bahrain)

15:35 ***Renewable Energy Resources and the Fight against Poverty***

Muhammad Abrar ul Haq (University of Bahrain, Bahrain); Hafiz Abid Mahmood Malik (Arab Open University Bahrain, Bahrain); Farheen Akram (University of Bahrain, Bahrain)

The main objective of the Sustainable Development Goals (SDGs) is to eradicate poverty in all its manifestations. While global poverty continues to decline, development has slowed and remains uneven globally. The research will be crucial in defining pathways out of poverty to ensure that no one remains impoverished. It is worth considering worldwide experiences and the many roads out of poverty in this regard, with a particular emphasis on the role of solar energy in poverty alleviation. This study aims to contribute to the growing discussion and critical knowledge about the role and nature of solar energy in reducing poverty incidence among Pakistani households. In the current study, data were collected from 570 rural households living in

rural areas of Punjab province using a multiple-stage random sampling technique. The headcount index was used to determine the prevalence of poverty in the selected households, and the analysis was conducted using a binary logistic regression model. The study developed seven hypotheses, and its empirical findings reveal that all of them are accepted, demonstrating that these indicators significantly affect poverty incidence in the studied region. More precisely, households with access to solar energy will have a lower likelihood of falling into poverty and this finding is statistically significant. Policymakers can foster new business prospects by providing free education and training on emerging renewable energy technologies. Such interventions would enable the government to reinvest the fruits of economic growth in policies that assist the poor.

15:55 ***Exploring into Shuttle Services Satisfaction Factors Toward Sustainable Transit Development***

Sirin Prommakhot and Tosporn Arreeras (Mae Fah Luang University, Thailand)

This paper is part of comprehensive research of shuttle services assessment towards public transport promotion in Mae Fah Luang University. The objective is to determine the associated factors of campus shuttle service satisfaction. The questionnaire surveys were conducted via an online platform, and the valid sample was 353. The data were analyzed using IBM SPSS statistics version 26 software. There are four parts of analysis, first: the socio-demographics of participants; second: exploratory factor analysis; third: satisfaction factors descriptive statistics; and final: vehicle ownership and level of study and associated factors of shuttle services satisfaction. The socio-demographics of participants were analyzed by descriptive analysis, and the satisfaction and attitude factors were analyzed by exploratory factor analysis using principal component analysis method with varimax rotation method and confirm the validity by the reliability analysis. The relationship between associated factors was analyzed by ANOVA test. Findings revealed that three components, including services, operations, and facilities, can adequately measure satisfaction factors of shuttle services. Moreover, the results delivered advantages to policy promotion on public transport and contributed to a long-term beneficial impact toward sustainable transit development.

16:15 ***Machine Vision Recognition System of Edible and Poisonous Mushrooms Using a Small Training Set- Based Deep Transfer Learning***

William H. Sevilla (Batangas State University, Philippines)

A way of classifying if a mushroom is edible or not is presented in this study. As mushroom are slowly becoming popular, classifying these mushrooms would be crucial as some of the toxic mushrooms that could be found in the mushrooms are able to kill a person or give them a bad case of the stomachache and other effects. Using the YOLOv3 model a model is created that is able to classify these mushrooms. The model that was chosen has gotten a mAP score of 96.68% and is able to detect most of the inputs that are used to test the model. The model is also able to achieve a 90% accuracy as it was able to correctly detect 18 photos out of 20 when tested. This model could be used in order to ensure that there would not be any toxic mushrooms in houses or parks that a child could just pick up and swallow without being noticed by any adults.

16:35 ***Time Series Forecasting for Decision Making on City-Wide Energy Demand: A Comparative Study***

Orhan Nooruldeen (Imam Ja'afar Al-Sadiq University, Baghdad, Iraq., Iraq); Salwan Alturki (Al Muthanna University, Iraq); Mohammed Rashad Baker (Imam Ja'afar Al-Sadiq University, Baghdad, Iraq., Iraq); Ahmed Ghareeb (University of Kirkuk, Iraq)

Time series modeling and forecasting are critical in various practical applications, including the energy sector, and have been actively investigated in this field for several years. Many relevant methods for enhancing the accuracy and efficacy of time series modeling and forecasting have been proposed in the literature. This study aims to provide a comparative analysis of various common time series modeling and forecasting techniques for the daily electricity demand of the city of Kirkuk. The ability of the presented models to be extrapolated as well as increasing the confidence in models are also examined. Two years of out-of-sample data are used to validate the models. The Long Short-term Memory (LSTM) outperformed the other series types, demonstrating good agreement with the actual data. This study has implications for boosting renewable energy deployment, planning demand-side management, and measuring energy and cost-saving actions.

16:55 ***Determination of Insulation Parameters with Optimization Algorithms***

Ozen Gunal (Manisa Celal Bayar University, Turkey); Mustafa Akpinar (Sakarya University, Turkey & Amity University, United Arab Emirates); Kevser Ovaz Akpinar (Sakarya University, United Arab

Emirates & Rochester Institute of Technology, United Arab Emirates)

Insulation is one of the essential energy efficiency and sustainability topics. While insulation is primarily the subject of buildings, insulation can also be made in pipes and heat exchangers in the factory environment. In the first example of this study, the insulation material that should be used for the specified heat loss in the case of a basic circular heat source being covered with insulation material was determined, while in the second case, the targeted insulation thickness with the accepted maximum heat loss and insulation material coefficient was tried to be determined. The results obtained show that errors were zero in particle swarm optimization (PSO) and artificial bee colony (ABC) algorithms in the first case. In the second case, PSO, ABC, and firefly (FA) optimization algorithms have the lowest average error with 3x10E-5%, 1x10E-5%, 3x10E-5%, respectively.

PS8-8: PS8-8

Chairs: Farheen Akram (University of Bahrain, Bahrain), Donlaporn Suwanthep Suwanthep (Mae Fah Luang University, Thailand)

15:35 ***Dimension Learning-Based Hunting Strategy for the Solution of Economic Dispatch***

Muhammad Mahfooz Rafique (UET Taxila); Aftab Ahmad (UET Taxila, Pakistan)

This paper introduces a strategy used in the grey wolf optimization algorithm to solve the problem of economic dispatch having equality and inequality constraints for power system operation and planning. To analyze the strategy, called dimension learning-based hunting in grey wolf optimizer, the algorithm is applied on different IEEE standards test systems such as 6, 13, and 40, and the findings are equated with previous techniques developed to solve the economic dispatch problem. The comparison signifies that the modified grey wolf optimization can provide improved results in terms of cost reduction and performance.

15:55 ***Multicriteria selection of photovoltaic panels available using the SWARA-VIKOR methods in tunisia market***

M. ejda Bouzid (Higher Institute of Industrial Management of Sfax, Tunisia); Ahmed Frikha (Université de Sfax (ISGI), Tunisia & Institut Supérieur de Gestion Industrielle de Sfax, Tunisia); Mohamed Ali Elleuch (University of Tunisia & Higher Institute of Industrial Management of Sfax, Tunisia)

Renewable energies hold a considerable place, in particular photovoltaic energy. PV panels are an envelope solution that combines energy generation and net energy demand reduction. In addition, PV models do not perform the same functions in terms of several factors. This article aims to propose a multicriteria decision analyses approach to solve the problem of selecting a set of available photovoltaic panels for various users in Tunisia. The proposed approach for raking the photovoltaic panels is based on the SWARA method to get a relative weight of each criterion, then integrate the VIKOR method to rank the alternatives (PV panels). Lastly, we verify the results and sensitivity analysis is performed to show the reliability of the proposed approach

16:15 ***Performance Assessment of Solar Combined System for a Detached House: Solar Fraction and Collector Efficiency***

Brahim Belmahdi (Univsesity of Abdelmalek Essaadi, Morocco)

Nowadays, a solar combined system is usually used in domestic hot water heating (HWH). In addition, domestic HWH consumption data is useful for a dynamic simulation for producing space heating and solar hot water of a solar combined system. The aim of this paper assessed and compare the energy performance of the solar combined system for a detached house in the Mediterranean climate. By using three cases study. Three different configuration models were used including ambient temperature, solar radiation on a horizontal and inclined surface to achieve our proposed methodologies in terms of solar fraction and collector efficiency, which were simulated and tested by TRANSOL software. The result reveals that the third model of each case has been considered as an appropriate configuration. The selected configuration reaches a higher value compared to the other model. Ultimately, the result verifies that the third model (high-performance FPC) is highly accurate compared to the previous cases.

16:35 ***Comparative Analysis of Controllers for Power System Dynamic Stability Improvement***

Habitamu Endalamaew Kassahun (University of Gondar, Ethiopia); Ayodeji Olalekan Salau (Afe Babalola University, Ado-Ekiti, Nigeria); Shaimaa H. Mohammed (Sumer University, Iraq)

A modern power system network is an interconnection of generating stations, long transmission lines, and distribution network loads. Interconnected power system networks face various challenges of instability. The presence of a dynamic disturbance in the power system network causes the problem of power system dynamic instability. Changes in the load, the use of high gain exciters, the use of high voltage direct current converters with negative damping, and the connection of poorly tuned generator excitations are examples of small-signal disturbances that disrupt a power system. The presence of a small-signal perturbation causes a constant increase or decrease in the alternator rotor speed, as well as an increase in the amplitude of the rotor oscillation. In this paper, these challenges were addressed by using suitable controllers to improve the synchronizing and damping torque of the system. The dynamic instability of the power system using a fuzzy logic controller (FLC) and STATCOM was investigated through simulation, individually and in comparison. The required data for simulation purposes was obtained from the IEEE 9 bus test system. The application of FLC is studied through simulation using the systems model with its linear simplified equations using MATLAB Simulink. The input parameters of the FLC used to enhance the power system dynamic instability are speed deviation and rate of change of speed of the synchronous alternator. The change of speed, rotor angle, and electrical torque deviation response versus time of full and 25% input mechanical power change was obtained. The simulation results show that the oscillation of the rotor angle and amplitude response of the system with the FLC is damped at 0.2s with an amplitude of 0.5 p.u, but the oscillation of the rotor angle and amplitude response of the proposed system with STATCOM is damped at 3.5s with an amplitude of 0.8 p.u. As a result, the proposed power system with FLC provides good damping of local mode oscillation, low overshoot and settling time response as compared to STATCOM.

16:55 ***Pro-Environmental Habits and Ecological Responsibilities***

Abid Rashid Gill (The Islamia University of Bahawalpur, Pakistan); Muhammad Abrar ul Haq (University of Bahrain, Bahrain); Afrasiyab Arshad (The Islamia University of Bahawalpur, Pakistan); Farheen Akram (University of Bahrain, Bahrain)

Habits provide the foundation of many everyday acts and maybe formidable barriers to change; once formed, habits remain without much thinking or re-consideration. Habits are rarely included in research on pro-environmental behavior, which instead highlights the relevance of values, norms, attitudes, intentions, and motivation for pro-environmental conduct. Therefore, this study has a key research objective to analyze the pro-environmental habits of common citizens in Pakistan, especially in South Punjab. For this purpose, the primary data has been collected from 430 individuals living in south Punjab, Pakistan. Descriptive analysis has been conducted for four main factors namely, pro-environmental habits (PEH), environmental concern (EC), health concern (HC), economic concern (ECOC) to analyze Pro-Environmental Habits of common citizens. This study indicates that pro-environmental habits are not a unitary, undistinguishable idea and that a diverse arrangement of factors decides the diverse forms of pro-environmental habits. Hence, it is significant to first classify the behavior to change and then find what factors could explain that specific behavior.

PS8-9: PS8-9

Chairs: Mourad Messaadia (University of Bahrain, Bahrain), Bussaba Sitikarn (Mae Fah Luang University, Thailand)

15:35 ***Hybrid Momentum Search Algorithm For Solving Non-Convex Economic Dispatch Problem***

Summaya Qasim (University of Engineering and Technology (UET), Taxila & UET Taxila, Pakistan); Aftab Ahmad (UET Taxila, Pakistan)

In this proposed research Momentum Search Algorithm (MSA) is labored to resolve Economic Dispatch (ED) delinquency. ED is an exceptionally non-linear, nonconvex, and multi-dimensional power structure problematic optimization. MSA is a metaheuristic technique enthused by law of conservation of momentum. In this research, MSA is used to unravel nonconvex IEEE 3-unit and 6-unit test scheme including losses. Simulation results show perfection in implementation time and cost demonstrating the rationality of anticipated procedures in resolution of ED delinquency.

15:55 ***A Decision Support Tool for Minimizing Energy Consumption in Water Distribution Networks***

Abdulla Mohammed (Khalifa University, United Arab Emirates); Mohammed Abdallah (Emirates Water & Electricity Company (EWEC), United Arab Emirates); Andrei Sleptchenko and Ali Bouabid (Khalifa University, United Arab Emirates)

Economic development and population growth are continuously increasing the pressure on water utilities. Water transmission and distribution networks are considered an energy-intensive process. The primary energy consumption in water networks is due to pumping. Minimizing the energy consumption of the pumps becomes the primary target for many water utilities around the world. This research aims to develop a decision tool to optimize pumping operation costs in water distribution networks. A pilot case study from a utility water network company is selected to develop and test a new optimization tool. The case study consists of two water pumping stations, six variable speed pumps, six tanks, and nine demand nodes. The operation system of these pumping stations automatically controls all the variables (motor speed, pressure, flowrate, valve opening, and closing) that will satisfy the hydraulic requirement of the water network. Currently, the start and stop of each pump are decided based on human experience regardless of the electricity tariff. In this study, a new optimization decision tool is developed to help the operation decide the optimum pumping flowrate for the upcoming 24 hours, minimizing pumping cost and satisfying all requirements and constraints. The model required the user to fill the hourly demand forecast at each demand node, electricity tariff, initial tanks level, maximum and minimum pump flowrate. The optimization model uses a linear programming algorithm for finding the optimum flowrate for 24 hours. AIMMS optimization software was selected for the implementation of the optimization model and the development of a user-friendly interface. The optimum flowrates were tested on EPANET to verify the feasibility of the optimum schedule from hydraulics perspectives. Results show that the new optimization tool is robust and has successfully reduced the energy cost of a pumping station by up to 9%.

16:15 ***Design of a Rocket-powered Descent Jetpack Equipped with Parachute***

Abdul Qader Abdullah, Ahmad Mahammad Habash, Mohamed Abdo Mahmoud, Abdullah Raed Labeeb, Mohamed Moutasim Ahmed and Sharul Sham Dol (Abu Dhabi University, United Arab Emirates)

This project focus on designing and simulating a scaled down of rover spacecraft mission used for descending operations with a rocket-powered jetpack after entering the atmosphere of Mars. The aim is to investigate the different phases of mars descending operations, to use the CFD code to verify the theoretical results obtained and to investigate the aerodynamic properties of the components (nozzle and parachute). The liquid propellant pump fed Hydrazine with Nitric Acid Oxidizer was found to be the optimum fuel for this design project. A steady state with K-epsilon turbulence model were simulated to solve the Navier-Stokes Equation. The observed results illustrate that the theoretical calculations match with the CFD results by an approximate of 2.9% error in drag coefficient of the parachute and 6.4% error in the thrust comparison of the nozzle.

16:35 ***Optimal Power Dispatch of Distributed Energy Resources in Unbalanced AC Microgrid Considering Load and Generation Uncertainties***

Zeeshan Yousaf and Sarib Malik (University of Engineering and Technology Taxila, Pakistan)

Distributed Energy Resource (DER) scheduling is usually performed while considering lumped load models in unbalanced distribution system (UDS). However, it is not necessary that lumped load models represent the actual characteristics of distribution system. Therefore, in this paper, DERs scheduling is performed while considering time-varying loading characteristics of each phase of UDS. Grasshopper Optimization Algorithm (GOA) is used to optimize the performance of UDS. The proposed methodology is implemented on IEEE 37 node feeder, and its comparison with recent studies demonstrates the effectiveness of the approach

16:55 ***Improving the passive energy efficiency of an office building in Agadir Morocco using dynamic thermal simulations in DesignBuilder***

Fatiha Outgouga (Ibn Zohr University, Morocco)

This study aims to assess the impact of various passive energy efficiency measures on the thermal performances of an office building in Agadir. The parameters evaluated are orientation, envelope composition, type and area of windows glazing, natural ventilation, and shading devices. To evaluate the impact of these parameters; occupation, lighting, and appliances densities are

constant in the different scenarios. Thermal simulations are performed using DesignBuilder. Results show that these measures have a positive impact on the energy performance of the building, by reducing its annual loads. By quantifying the effect of different passive approaches, it is concluded that the use of insulation materials has a significant effect on energy conservation, compared to other parameters. The environmental impact of the envelope composition is investigated too, the utilization of the insulation materials leads to greenhouse gas emissions mitigation. The optimal combination that permits energy consumption reduction is southern orientation, wall and roof insulation, windows of double glazing, low infiltration rate (0.3vol/h is the adopted value), low window-to-wall ratio (the chosen WWR is 10%), and the use of blinds.

Friday, March 25 15:35 - 16:55 (Asia/Bangkok)

PS8-1: PS8-1

Chairs: Abdulsattar Alazzawi (University of Bahrain, Bahrain), Prapamon Seeprasert (Mae Fah Luang University, Thailand)

15:35 ***Application of Industrialised Building System in the Field of Construction toward Sustainability: Future Routes and a Theoretical Mapping***

Aawag Mohsen Alawag (Universiti Teknologi PETRONAS, Malaysia); Ammar AL-Ashmori (Universiti Teknologi PETRONAS & Yemen, Malaysia); Syed Ammad (Universiti Teknologi PETRONAS, Malaysia)

Industrialized Building System (IBS) is a construction technique in which components are manufactured in a controlled environment (on or off-site), placed, transported, and assembled on-site with minimal extra site activities, according to the Construction Industry Development Board Malaysia (CIDB). The application of IBS in construction projects could significantly improve site performance in terms of safety, quality, cost-effectiveness, productivity, sustainability, and waste reduction. In the construction industry, sustainability has become increasingly essential. Meanwhile, due to the extremely difficult constraints that stakeholders encounter in adopting new technology and a scarcity of experienced labor, the degree of IBS implementation in Malaysia remains low. According to several studies, typical IBS is gradually being pushed to the background. However, no systematic study applying bibliometric analysis of IBS studies to further investigate relevant research in this field was uncovered. This paper offers a summary of the IBS recent studies gathered from the "Web of Science" database. VOSviewer was used with bibliometric analysis technique to visualize the literature contained in the study scope. As a conclusion, six clusters were discovered that focused on these primary theme segments: IBS approach, prefabrication, construction, innovation, sustainability, and management. Based on the current gap, this paper makes recommendations for future IBS research. Assisting the IBS research community with research and development

15:55 ***Values-Based Decision-Making for Conserving Built Heritage***

Kanika Bansal (Guru Nanak Dev University, Amritsar & Chitkara School of Planning & Architecture, Chitkara University, Punjab, India); Pankaj Chhabra (Guru Nanak Dev University, Amritsar, Punjab, India)

Amidst the urbanization processes and need for contemporary development, preservation, conservation and maintenance of heritage buildings requires rational decisions by the urban local bodies (ULBs). The main challenge lies in the subjectivity in assigning values to heritage buildings because of the diverse stakeholders involved in the process. Value assessment aids to assign Grades (Grade I/II/III) to heritage buildings that ultimately steers the conservation action to be taken. Conflicting opinions on grading heritage buildings and deciding which building is to be preserved and which should be pulled down has resulted in the need for an analytical framework to support the process of grading built heritage. Multi Criteria Decision Making (MCDM) offers a formal methodology to deal with such problems induced due to decision-making taking into account the available information and stakeholders' opinion. This study accounts for the problems in grade assessment of heritage buildings through the Weighted Sum Method (WSM) for ranking attributes based on multiple criteria, which in the current research are the values assigned to the heritage buildings. The present study thus, aims to grade the built heritage in the colonial hill town (CHT) of Shimla in north India through a values-based priority decision-making method. The research will aid the decision-makers to prioritize the level of

conservation these buildings deserve through a transparent analytical framework which otherwise is done subjectively involving conflicting stakeholders, leading to disputes over which heritage resource to be conserved and to what level.

16:15 ***Proposing a Multidimensional Model to Support Organizational Transformation and Sustainable Development Decision in the Arab World***

Saeed Hamedd Aldulaimi and Marwan Mohamed Abdeldayem (Applied Science University, Bahrain); Abdulsattar Alazzawi (University of Bahrain, Bahrain); Abdulhameed Baqi (Applied Science University, Bahrain)

this study aims to revise the contemporary change management and organizational transformation models and propose a multidimensional model of organizational transformation that achieves the objectives of sustainable development from an Arab perspective. Literature review and secondary data analysis were employed to formulate the hypothesized model of organizational transformation. The findings of this study offer valuable insights into the Arabian culture and its influences in a transformational context. The findings of this study will be valuable to the decision-makers and business organizations that intend to achieve change drives, especially those in the Arabic area. Directors at global companies can likewise benefit from this study assuming they have transactions with individuals from this region. The study is among the primary that explores the issue of organizational transformation according to the viewpoint of Arab culture.

16:35 ***Using Blockchain Technology for a Sustainable Agri-food Supply Chain in Thailand***

Korawit Fakkhong, Nattaphon Rangsaritvorakarn and Chairerk Tantitecha (Mae Fah Luang University, Thailand)

Agri-food supply chain are facing dynamic changes in both developed and developing country, where traditional markets are increasingly challenged through modern trade market (supermarkets) chains, and this offers particular opportunity for Thailand food producers if they can adhere to the exacting supplier standards and systems dictated by supermarket chains particularly quality assurance. Rural farmers can find themselves excluded from dealing with such bodies because they do not have the resource to implement the necessary systems to guarantee process quality. There is increasing need to develop more efficient and effective logistics operation in order to better integrate Thailand's agri-food industry particularly food producer into this important business sector. The blockchain in its guise as distributed ledger's allow encrypted information regarding each transaction to be securely shared between the relevant parties and offers a new approach for enhancing transparency and traceability between business and food producer, as well as the government organisations. This paper introduces the challenges currently faced by food producers and demonstrates how blockchain could potentially integration and improve service reliability for food producers.

Friday, March 25 17:15 - 17:45 (Asia/Bangkok)

Closing: Closing Ceremony