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Keynote Speaker 1

Prof. Dr. Ir. Mochamad Ashari (Institut Teknologi Sepuluh Nopember (ITS) Surabaya, Indonesia)

Mochamad Ashari is an ITS electrical engineering lecturer since 1989 after graduating from the same university. In 1997 and 2002, he completed his Master of Engineering (M.Eng) and Philosophy of doctor (Ph.D) in Electrical Engineering from Curtin University, Australia.



Subsequently, in 2009 he was confirmed as a professor of FTI-ITS in the field of Power Electronics.

Professor Mochamad Ashari has published more than 20 scientific papers in international journals, including IEEE, 40 research seminars that are devoted to loading Power Electronics and their applications in grinding systems, distributed plants, renewable energy, and electric vehicles. More than 90 undergraduate students, 25 master students, and 10 doctoral students completed their final project, thesis, and dissertation under the guidance of Professor Mochamad Ashari. In 2009 - 2010, he was selected as the best lecturer and researcher in the field of energy at ITS.

Practical experience in the design and analysis of electric power systems, harmonics and power quality in industries in Indonesia (including fertilizer factories, cement plants, PLN) has been routinely carried out since 1990 until now.

Professor Mochamad Ashari was known as the chair of the Indonesian Electrical Engineering forum (FORTEI) 2010-2012, as well as the chair of the ITS Electrical Engineering for 2 times the leadership period of 2003-2007 and 2007-2011. In 2009 he was elected as the Chair of the National Level Achievement Study Program, through a national competition organized by the Higher Education Ministry of National Education. The Double Degree and Combined Program of Electrical Engineering ITS with S1 Fontys University - Netherlands, S2 Darmstadt University of Applied Sciences - Germany, S3 Kumamoto University - Japan, and NTUST - Taiwan were the products of superior products when they were Chairperson of the Department. Currently, he is the Rector of ITS.

The International Conference on Smart Technology and Applications (ICoSTA) 2020 "Empowering Industrial IoT by Implementing Green Technology for Sustainable Development" February 20, 2020 – Surabaya City, East Java Province – Indonesia

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- Electrical Power System
- High Voltage Engineering
- Microcontroller Systems



The International Conference on Smart Technology and Applications (ICoSTA) 2020 "Empowering Industrial IoT by Implementing Green Technology for Sustainable Development" February 20, 2020 – Surabaya City, East Java Province – Indonesia

Keynote Speaker 3:

Prof. Dr. Hung-Yee Shu Hungkuang University

Dr. Hung-Yee Shu is a distinguished professor of environmental engineering, and he is Executive Vice President at Hungkuang University. He has more than 20 years of experience in teaching and research at the university level. Dr. Shu holds a Ph.D. in Chemical Engineering and M.S. in Environmental Science from New Jersey Institute of Technology. Previously, Dr. Shu served as Head of Environmental



Engineering Department, Dean of research and development, Dean of Academic Affairs, Hungkuang University, Taiwan. He has authored more than 50 manuscripts from various internationally recognized journals and reviewed research papers for various journals. Recently, he conducts a campus sustainability report of Hungkuang University and helps Hungkuang University win the Top 50 Corporate Sustainability Award 2018 from TAISE (Taiwan Institute for Sustainable Energy) Taiwan.

The International Conference on Smart Technology and Applications (ICoSTA) 2020 "Empowering Industrial IoT by Implementing Green Technology for Sustainable Development" February 20, 2020 – Surabaya City, East Java Province – Indonesia

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He received the Best Paper Award at Chung Yuan Christian University, First Place Best Department Chair Research Award, and Third Place Best Department Chair Research Award, at the Technological Institute of the Philippines in 2016, 2012, and 2011, respectively. His research interests include renewable energy systems, computational intelligence based control and estimation, embedded systems, applied swarm intelligence algorithms and evolutionary computing techniques, self-organizing and adaptive control systems, chaos theoretic concepts, and applications.

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Paper ID:1570609404

Performance comparison of wireless protocol IEEE 802.11ax vs 802.11ac

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Abstract—The sixth generation of wireless protocol IEEE802.11ax has been launched and offers better performance than the previous fifth-generation wireless protocol IEEE 802.11ac. This paper reviews the performance of both wireless protocols in the same operating frequency of 5 GHz. We used Network Simulator NS -3 as a simulation tool that offers flexibility, lesser time to set up and ease the experiment to any scenarios we need to perform. Furthermore, this paper focuses on analyzing and comparing the throughput of protocol IEEE 802.11ax Mcs-11 and 802.11ac Mcs-9 with a certain payload size and a various number of clients. The other parameters are set at certain values, such as a spatial stream, channel width, modulation and coding scheme, guard interval time and simulation time. The simulation result shows that the IEEE protocol 802.11ax Mcs-11 has a better throughput performance than IEEE 802.11ac Mcs-9 with a large number of clients. In the simulation, a node of access point was accessed of 512 clients, IEEE 802.11ax Mcs-11 have more long delay response time than IEEE 802.11ac Mcs- 9 at the beginning for a few milliseconds, but after 0.5 ms IEEE 802.11ax shown a stable and bigger throughput value than IEEE 802.11ac that its shown decrease. *Keywords*— IEEE, protocol, 802.11ax, 802.11ac, performance, throughput

Paper ID: 1570609975

Improving Intrusion Detection System by Estimating Parameters of Random Forest in Boruta

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Abstract—To overcome the security problem of computer networks, the Intrusion Detection System (IDS) is developed. It is intended to identify an attack. Various types of IDS are built according to the environment: signature-based and anomaly-based. This second type of IDS can identify attacks that have not been known. In this case, machine learning is a possible method to develop an IDS model, which comprises many processes, including feature selection. The Boruta algorithm is a feature selection method that is good enough to apply to machine learning. However, in its application on the NSL-KDD dataset, this algorithm has an infinite loop problem. This paper presents the analysis and estimation of random forest parameters, precisely the depth and number of trees; additionally, the use of entropy and Gini index as z-score in the Boruta algorithm is considered. The experimental result shows that the proposed method is able to prevent the infinite loop, which indirectly improves the performance of the existing algorithm.

Paper ID: 1570583532

Design and Implementation of an Emergency Datacasting System Using 2-meter Amateur Radio Band

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Abstract—Even in the 21st century, modern communication technology is still affected by natural and man-made disasters that threaten people's lives and make the internet or mobile phone networks unavailable for use. The Design and Implementation of an Emergency Datacasting System using 2meter Amateur Radio Band is a prototype consisting of microcontrollers and walkie talkies operating on the 2-meter amateur radio band of 144-148 MHz. It is used to enable a two-way communication system, even without cellular service and internet, between the community, barangays, public service groups and local/national government agencies related to disaster response. With this, responding to the victims of calamities most especially to areas or communities that has no service will be easier and faster. Once the system is on, radio transceiver in each base station communicates with each other. Wi-Fi enabled devices to detect and connect to an access point provided by the microprocessor, which could let 255 devices connect. When connected, it will be redirected to a specific IP address, where they can send/receive private or emergency messages to and from users and admin. Users from different base stations meet at a common webpage. Microcontroller serves as the modem which encodes and decodes the information to and from audio frequency signals, respectively. It is fed to the walkie-talkie to transmit/receive tones. Using a statistical method, the device is said to be 100% accurate through several tests receiving the same message without any errors, 97.6% reliable in the time span of 8 hours through its transfer time and having an internal consistency of "Good" for the user-friendliness of the webpage interface. The device improves existing datacasting systems since it does not depend on mobile networks and it commonly uses a one- way not the two-way distribution of information.

Keywords—Emergency communication, disaster response, datacasting, 2-meter amateur radio band, wireless fidelity, two-way communication.

Paper ID: 1570584840

Predictors of EHR Use by Healthcare Professionals. A Case Study of IraqHospital

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5th Norhamreeza Abdul Hamid Faculty of Computer Science and Information Technology Universiti Tun Hussein Johor<mark>, Malaysia</mark> norhamreeza.abdulhamid@gmail.com Abstract—Paper-based approach to clinical documentation such as handwritten notes among health care providers is the cause of errors in the medical field. Therefore, the health record system needs to be replaced with an electronic health record (EHR). Thus, the intention of the use of electronic services is essential for successful electronic health implementations. Therefore, this study is intended to identify the main factors affecting the intention of the use of the electronic health record in Iraq. The present study used a quantitative method approach for data collection using a survey from staff who work in the main hospital in Dhi-Qar. Data were analyzed using Structural Equation Modeling using AMOS. The results indicated a significant relationship between Ease of Use, Usefulness, Usefulness, Attitude, and Intention of use of EHR. These findings have implementation for decision-makers in Iraq government to improve the future implementation of e-health services. Keywords—Electronic Health, Health, workers, Quantitative approach, SEM

Paper ID: 1570590248

Automatic Sign of Commencement of Work from Enterprise **Resource Planning**

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Abstract— Enterprise Resource Planning (ERP) is a package of systems and software used by enterprises to manage their daily business activities, such as financial management, procurement, production, projects, human resources, and others. This system can facilitate business with real-time and accurate information so that the leaders can make business decisions well. The use of ERP in a manufacturing company usually stops only in the administrative department and does not reach the production machinery. In this paper, the researchers propose a way of interconnecting the ERP system with parts of the production machine to get more energy savings and speed up the time commencement of work. By using signal lamps that are connected to the ERP system and communicating through Message Queue Telemetry Transport (MQTT), the staff in the production machine area can immediately find out the status of the readiness of materials and production equipment in the inventory section.

Keywords— ERP; IoT; MQTT; Industry 4.0

Paper ID: 1570598913

Improved K-Means Algorithm on Home Industry Data Clustering in the Province of Bangka Belitung

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Paper ID: 1570610962 Design Of One Phase Inverter 250 Watt Third Harmonic Pulse Width Modulation Method In Mini-Grid Photovoltaic

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Abstract—An inverter is an electrical power device that functions to convert DC voltage to AC voltage. The design of this inverter applied the THIPWM method (Third Harmonic Injector Pulse Width Modulation) which was implanted into the Arduino Uno microcontroller with the aim to increase the inverter performance by forming the reference signal using the sum of sinusoidal (fundamental) waves with the third harmonic wave. The simulation using PSIM software indicated that with DC voltage input of 267 Volts, the THIPWM method inverter, after passing through the LC filter, AC voltage of 221 Volts could be produced, which could theoretically be implemented. The result of the implementation test showed that the system could only load up to 40 watts because if the system was loaded with more than 40 watts, the inverter voltage source of the quadratic boost converter would decrease and could not reach 267 Volt and the measurement value of inverter output voltage, according to calculation, had a maximum error of 3.12% in every load change. *Keywords—Inverter, THIPWM method, Third Harmonic Injection, LC filter.*

Paper ID: 1570611033

Industry 4.0 strategic alignment framework: Multilevel perspective of digital transition in Indonesia

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Abstract—Industry 4.0 as a concept and process is growing rapidly. In Indonesia, there are many companies that are aware of the need to prepare the company in adapting Industry 4.0 trends into their business process. However, when implementing Industry 4.0 capabilities into the company, there are many challenges that are difficult to face. This study proposed a new methodology to align between Industry 4.0 capabilities and the strategic development process in the company. This study combines two different frameworks, which are TOGAF Architecture Development Method (TOGAF ADM) and Indonesia Industry 4.0 Readiness Index (INDI4.0) to develop a new strategic alignment framework that can help the company to have an Industry 4.0 capabilities while at the same time still aligned with the company priorities..

Keywords-Industry 4.0, Technological Transition, Strategy

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A Survey on Multimodal Information Retrieval Approach