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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL INTERNASIONAL

Judul Jurnal Ilmiah (Artikel)	:	Crude palm oil price prediction using multilayer perceptron and long short-term memory		
Nama/ Jumlah Penulis	:	Ichlasul Amal, **Tarno** , Suparti		
Status Pengusul	:	penulis ke-2, corresponding author		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal	:	Journal of Mathematics and Computational Science
		b. Nomor ISSN	:	19275307
		c. Vol, No., Bln Thn	:	Vol 11, No 6: 8034-8045
		d. Penerbit	:	SCIK Publishing Corporation
		e. DOI artikel (jika ada)	:	
		f. Alamat web penerbit	:	http://scik.org/index.php/jmcs/article/view/6680
		g. Terindex	:	Copernicus

Kategori Publikasi Jurnal Ilmiah (beri ✓pada kategori yang tepat)	:		Jurnal Ilmiah Internasional Bereputasi
		√	Jurnal Ilmiah Internasional Terindek Basis Data
			Jurnal Ilmiah Internasional Terindek Basis di luar kategori 2

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Prof. Dr. Widowati, S.Si., M.Si
NIP. 196902141994032002
Unit Kerja: FSM UNDIP
Bidang Ilmu: Matematika

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Nama : Prof. Dr. Sunarsih, M.Si
NIP. 195809011986032002
Unit Kerja : FSM Undip
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Semarang, April 2023
Reviewer 1

Prof. Dr. Widowati, S.Si., M.Si
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Bidang Ilmu: Matematika

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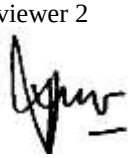

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MODELLING AND OPTIMAL CONTROL ANALYSIS OF TYPHOID FEVER

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Abstract: In this paper, we formulate a deterministic mathematical model to describe the transmission dynamics of typhoid fever by incorporating some control strategies. In order to study the impact of these control strategies on the dynamics of typhoid fever, the model captures vaccination and educational campaign as control variables. We show that the model is mathematically and epidemiologically well positioned in a biologically feasible region in human populations. We carry out a detailed analysis to determine the basic reproduction number R_0 necessary for the control of the disease. The optimal control strategies are used to minimize the infected carriers and infected individuals and the adverse side effects of one or more of the control strategies. We derive a control problem and the conditions for optimal control of the disease using Pontryagin's Maximum Principle and it was shown that an optimal control exists for the proposed model. The optimality system is solved numerically, the numerical simulation of the model shows

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ON INTERVAL VALUED FUZZY ALMOST (m,n)-BI-IDEAL IN SEMIGROUPS

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Abstract. In this paper, we study the concept of an interval valued fuzzy almost (m,n)- bi-ideals. We investigate properties of an interval valued fuzzy almost (m,n)-bi- ideal in semigroups.

Keywords: almost (m,n)-bi-ideal; bi-ideal; interval valued fuzzy almost (m,n)-bi-ideal.

2010 AMS Subject Classification: 03E72, 18B40.

1. INTRODUCTION

The theory of fuzzy set was presented in 1965 by Zadeh [12]. The theory of fuzzy semigroups contained by Kuroki in 1979 [8]. Later the theory of interval valued fuzzy sets was introduced in 1975 by Zadeh [13], as a generalization of the notion of fuzzy sets. Interval valued fuzzy sets have various applications in several areas like medical science [3], image processing [2], decision making [14], etc. In 2006, Narayanan and Manikantan [7] developed the theory of interval valued fuzzy subsemigroup and studied types interval valued fuzzy ideals in semigroups. In 1961, Lajos [5] studied the concepts of (m,n)-ideals in semigroups which generalized of ideals of semigroups. The reseach of (m,n)-ideals of semigroups has interested many such as Akram et al. [1], N. Yaqoob and M. Aslam [10] and many others. In 2020 Ahsan et al. [6] extened

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A COMPARISON OF LEARNING ALGORITHMS FOR SEASONAL TIME SERIES FORECASTING USING NARX MODEL

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Abstract. In this study, we propose a nonlinear autoregressive network with exogenous inputs (NARX) model with two deterministic seasonal dummy approaches, that is binary dummy variables and sine-cosine pairs. For significant lag is selected using a stepwise AIC method, including a deterministic seasonal dummy. While the number of neurons in the hidden layer is conducted by trial and error method on one to five neurons. The NARX model is trained using five types of algorithms and a tangent hyperbolic activation function. Each algorithm is compared on all approaches to see the speed of convergence and forecasting accuracy. In addition, time series data is performed using data without and with the first differencing process. The results of the case study show that the best approach to the NARX model is to use binary dummy variables and data with the first differencing process. On the other hand, the GRPROP algorithm shows the least computation time, the fastest training process steps, and forecasting accuracy with the best MAPE value. Overall, the GRPROP algorithm is the best training algorithm in this case. However, the GRPROP algorithm on the variation of its parameters shows it is not stable. While the RPROP algorithm for parameter variations shows a better speed and stability of convergence than backpropagation and GRPROP. The backpropagation algorithm occasionally outperforms GRPROP on its parameter variations.

Keywords: time series; with and without first differencing; seasonal dummy; stepwise; backpropagation; RPROP; GRPROP; NARX model.

2010 AMS Subject Classification: 37M10.

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MATHEMATICAL MODELLING OF THE TRANSMISSION DYNAMICS OF HEPATITIS B VIRUS IN THE PRESENCE OF IMPERFECT VACCINATION

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Abstract. Hepatitis B infection remains a global problem since the 1990s and the reasons for which disease is still in existence remain poorly understood. However, understanding the important role played by vaccination in the transmission dynamics of Hepatitis B virus is critical to its control and management. In this paper, an epidemiological model is proposed to model the spread of the Hepatitis B virus disease in the presence of imperfect vaccination. The basic reproduction number, $\mathbb{R}_0$ and the equilibria of the model are determined and the stabilities of the equilibria determined. It is shown that the disease-free equilibrium point is both locally and globally asymptotically stable when $\mathbb{R}_0 < 1$ while the endemic equilibrium point is proved to be locally asymptotically stable when $\mathbb{R}_0 > 1$. The model is also shown to exhibit a backward bifurcation phenomenon. Numerical simulations are carried out and it is observed that increasing both the vaccination and treatment rates reduces the populations of both the acutely infected and chronic carriers which eventually leads to the containment of the disease. We conclude that the combination of both vaccination and treatment with the use of a vaccine with a high efficacy is essential in the control of Hepatitis B virus disease.

Keywords: Hepatitis B virus (HBV); imperfect vaccination; treatment; simulations.

2010 AMS Subject Classification: 37N25.

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