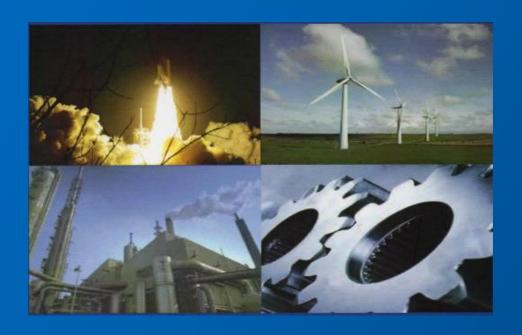


SINERGI

p-ISSN: 1410-2331 e-ISSN: 2460-1217 VOL. 29, NO. 1, FEBRUARY 2025

Scopus Indexed Journal

Accredited SINTA 1 by KEMENDIKBUDRISTEK, Decree No: 79/E/KPT/2023



SINERGI VOL. 29 NO. 1 PAGES 1-267 FEBRURY 2025 p-ISSN: 1410-2331 e-ISSN: 2460-1217

pISSN: 1410-2331 - eISSN: 2460-1217



Editor in Chief : Prof. Dr. Andi Adriansyah (UMB, Indonesia)

Editorial Board Prof. Dr. Abdul Wahid (Universitas Indonesia, Indonesia)

> Prof. Dr. Chenwei Deng (Beijing Institute of Technology, China) Prof. Dr. Makbul Anwari (King Abdul Aziz Univ., Saudi Arabia)

Prof. Dr.-Ing Mudrik Alaydrus (UMB, Indonesia) Prof. Dr. Muji Setiyo (UNIMMA, Indonesia)

Prof. Dr. Nangkula Utaberta (UCSI University, Malaysia)

Prof. Dr. Setiyo Budiyanto (UMB, Indonesia)

Assoc. Prof. Dr. Ahmad Fithriady (UMT, Malaysia)

Assoc. Prof. Dr. Ahmed Turan Ozdemir (Ervives Univ., Turkey)

Assoc. Prof. Dr. Hasliza A. Rahim (UniMAP, Malaysia)

Assoc. Prof. Dr. Rini Akmeliawati (Univ. of Adelaide, Australia)

Dr. Acep Hidayat (UMB, Indonesia)

Dr. Agab Bakheet Mohammednour (Al-Neelain University, Sudan)

Dr. -Ing. Darwin Sebayang (UMB, Indonesia)

Dr. Denny Setiawan (Kementrian Kominfo RI, Indonesia)

Dr. -Ing. Galih Bangga (Univ. of Stuttgard, Germany)

Dr. Ghaida Muttashar Abdulsahib (Univ. of Technology, Iraq)

Dr. Hatsari Mitsudharmadi (Abu Dhaby Polytechnic, UAE)

Dr. Jae Hyun Yun (Sungkyunkwan Univ., Republic of Korea)

Dr. Muchamad Oktaviandri (Swiss German University, Indonesia)

Dr. Osamah Ibrahim Khalaf (An-Nahrain University, Iraq)

Dr. Rosyida Permatasari (Universitas Trisakti, Indonesia)

Dr. Sunday Ayoola Oke (University of Lagos, Nigeria)

Dr. Teguh Prakoso (Universitas Dipenogoro, Indonesia)

Dr. Tao Huang (James Cook University, Australia)

Dr. Zulfa Fitri Ikatrinasari (UMB, Indonesia)

Editorial Staff Mega Avianti

Oonita Azillatin

Yananto Mihadi Putra

Editorial Address Fakultas Teknik Universitas Mercu Buana

Jl. Raya Meruya Selatan, Kembangan, Jakarta 11650

Tlp/Fax: 021-5871335

http://www.publikasi.mercubuana.ac.id/index.php/sinergi

SINERGI is a peer-reviewed journal published three times a year in February, June, and October. The journal is published by the Faculty of Engineering, Universitas Mercu Buana. Each publication contains articles comprising high-quality theoretical and empirical original research papers, review papers and literature reviews closely related to the fields of Engineering (Mechanical, Electrical, Industrial, Civil, and Architecture). The theme of the paper is focused on new industrial applications and energy development that synergize with local, green, and sustainable technologies.

pISSN: 1410-2331 - eISSN: 2460-1217



TABLE OF CONTENTS

Design of 3 DOF hexapod leg movement using inverse kinematics: bridging gaps in multilegged robot kinematics literature	1 - 8
Heru Suwoyo, Nur Aziz Taufikurohman, Yingzhong Tian, Achmad Burhanudin	
Department of Mechanical Engineering, Faculty of Engineering, University of Jember	
Department of Meditarious Engineering, Faculty of Engineering, Universitas Mercu	
Buana	
School of Mechatronic Engineering and Automation, Shanghai University	
Changes in the form of houses in the earthquake area Cihikeu village, Sarampad,	9 - 20
Cigenang, Cianjur	
Andjar Widajanti, Juang Esa Ramadhan, Raziq Hasan	
Department of Architecture, Faculty of Engineering, Universitas Mercu Buana	
Department of Architecture, Universitas Gunadarma	
Renewable energy in chemical industrial buildings for cost performance	21 - 32
Bernadette Detty Kussumardianadewi, Albert Eddy Husin, Lastarida Sinaga	
Department of Civil Engineering, Faculty of Engineering, Universitas Mercu Buana	
Development of face image recognition algorithm using CNN in airport security	33 - 42
checkpoints for terrorist early detection	
Eca Indah Anggraini, Fachdy Nurdin, Mohammad Obie Restianto, Sudarti Dahsan,	
Andini Aprilia Ardhana, Asep Adang Supriyadi, Yahya Darmawan, Syachrul Arief,	
Agus Haryanto Ikhsanudin	
Sensing Technology, Republic Indonesia Defense University Climatology Department, State College of Meteorology Climatology and Geophysics	
(STMKG)	
Geospatial Information Agency, Indonesia	
Effect of curing temperature on the soil physical and mechanical properties on	43 - 50
clay shale geopolymer fly ash stabilization	10 00
Edi Hartono, Willis Diana, Agus Setyo Muntohar, Muhammad Azhar, Lia Indriani	
Department of Civil Engineering, Faculty of Engineering, Universitas Muhammadiyah	
Yogyakarta	
Department of Road and Bridge Contruction Engineering, Politeknik Negeri Tanah Laut	
Advanced shooting target with bullet collector, semi-automatic bulls-eye paper	51 - 58
positioning and automatic shooting score	
Dena Hendriana, Yunita Umniyati, Erikson Ferry Soonggalon, Isaac Hansen Averino,	
Mohammad Rizky Gartina, Rakhmad Aryo, Iwan Iwan, Prima Kharisma Indra Yahya	
Department of Mechanical Engineering, Swiss German University	
PT. Pindad (Persero)	
Understanding passenger satisfaction and expectations in free bus service based	59 - 72
on socio-demographic characteristics in Johor and the Klang Valley, Malaysi	
Husna Zakaria, Munzilah Md. Rohani, Muhammad Fazreen Mohd Pozi	
Smart Driving Research Centre, Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn Malaysia	
Planning and Special Project, Johor Public Transport Corporation	
Flatining and Special Froject, Johol Fubilic Halisport Corporation	

Broadband HMSIW antenna using a demi hexagonal ring slot for X-band application	73 - 82
Dian Widi Astuti, Muslim Muslim, Umaisaroh Umaisaroh, Huda A Majid, Syah Alam Department of Electrical Engineering, Faculty of Engineering, Universitas Mercu Buana	
Department of Electrical Engineering, Faculty of Engineering Technology, Universiti Tun Hussein Onn Malaysia	
Department of Electrical Engineering, Faculty of Engineering, Universitas Trisakti	
Five questions on the multisensory perception in historic urban areas Eggi Septianto, Firmansyah Firmansyah, Heru Wibowo Poerbo, Widjaja Martokusumo Doctoral Student in Architecture, School of Architecture, Planning, and Policy Development, Institut Teknologi Bandung, Architecture Study Program, Faculty of Architecture and Design, Institut Teknologi Nasional (ITENAS) Bandung Architecture Design Research Group, School of Architecture, Planning, and Policy Development, Institut Teknologi Bandung	83 - 96
Effect of building designation on parking characteristics, road performance, and	97 - 108
zoning regulation	
Don Gaspar Noesaku da Costa, Yulius P. K. Suni Department of Civil Engineering, Faculty of Engineering, Universitas Katolik Widya Mandira	
Symbolism in contemporary mosque architecture discourse: an integrative	109 -128
literature review	
Doni Fireza, Azmal Sabil, Nangkula Utaberta	
Faculty of Civil Engineering and Built Environment, Universiti Tun Hussein Onn	
Malaysia, Architecture Program, Agung Podomoro University	
Department of Architecture, Universiti Tun Hussein Onn Malaysia School of Architecture and Built Environment, UCSI University	
Signal quality comparison of customer base and branching methods in fiber to the	129 - 142
home network design	125 172
Yusnita Rahayu, Muhammad Raihan Azhary, Razali Ngah, Arbiansyah Ali	
Department of Electrical Engineering, Universitas Riau	
Wireless Communication Centre (WCC), Faculty of Electrical Engineering, Universiti	
Teknologi Malaysia	
PT. PLN Icon Plus Strategic Business Unit Central Sumatra Regional, Riau Regional	
Office	
Inventory optimization model using Artificial Neural Network method and	143 - 154
Continuous Review (s,Q)	
Hanny Setyaningrum, Iphov Kumala Sriwana, Ilma Mufidah Department of Industrial Engineering, Faculty of Industrial Engineering, Universitas	
Telkom	
Improved recommender system using Neural Network Collaborative Filtering	155 - 162
(NNCF) for E-commerce cosmetic product	100 102
Subhan Subhan, Deny Lukman Syarif, Endah Widhihastuti, Senda Kartika Rakainsa,	
Muhammad Sam'an, Yahya Nur Ifriza	
Computer Science Department, Universitas Negeri Semarang	
Department of Pharmacy, Universitas Negeri Semarang	
Department of Informatics, Universitas Muhammadiyah Malaysia, Malaysia	
Spatial decision-making model for priority development of Indonesia coast guard	163 - 174
stations Noviente Herry Adjetmeie, Winnie Sentioni, Triuvylanderi Setitidieti Deveyane, Martine	
Novianto Hary Adiatmaja, Winnie Septiani, Triwulandari Satitidjati Dewayana, Martino Luis	
Department of Industrial Engineering, Faculty of Industrial Engineering, Universitas Trisakti	
College of Engineering, Mathematics and Physical Science, University of Exeter	

ANFIS method to enhance FMEA water operation model of Indonesia drinking water distribution system	175 - 184
Diah Septiyana, Mohamed Abd. Rahman, Tasnim Firdaus Mohamed Ariff, Desy Rosarina, Erry Yulian T. Adesta, Galang Persada Nurani Hakim, Nor Aiman Sukindar Department of Industrial Engineering, Faculty of Engineering, Universitas Muhammadiyah Tangerang	
Department of Manufacturing and Material Engineering, Kulliyyah of Engineering (KOE), International Islamic University Malaysia	
Department of Manufacturing and Material Engineering, Kulliyyah of Engineering (KOE), International Islamic University Malaysia	
Department of Industrial Engineering, Faculty of Engineering, Universitas Muhammadiyah Tangerang	
Department of Mechanical Engineering, Faculty of Engineering, Universitas Bandar Lampung	
Department of Electrical Engineering, Faculty of Engineering, Universitas Mercu Buana	
Product Design, School of Design, Universiti Teknologi Brunei Support Vector Machine (SVM) based Detection for Volumetric Bandwidth	185 -196
Distributed Denial of Service (DVB-DDOS) attack within gigabit Passive Optical Network	100 - 190
Sumayya Bibi, Nadiatulhuda Zulkifli, Ghazanfar Ali Safdar, Sajid Iqbal Faculty of Electrical Engineering, Universiti Teknologi Malaysia University of Bedfordshire	
King Faisal University Performance evaluation of hyper-parameter tuning automation in YOLOV8 and	197 - 206
YOLO-NAS for corn leaf disease detection	197 - 200
Huzair Saputra, Kahlil Muchtar, Nidya Chitraningrum, Agus Andria, Alifya Febriana Master of Artificial Intelligence, Department of Informatics, Universitas Syiah Kuala Department of Electrical and Computer Engineering, Universitas Syiah Kuala Research Center for Biomass and Bioproducts, National Research and Innovation	
Agency The Central Bureau of Statistics (BPS) Aceh Tamiang, Aceh Tamiang Regency Department of Electrical Engineering, Yuan Ze University	
Classification of palm oil fruit ripeness based on AlexNet deep Convolutional Neural	207 - 220
Network Rudi Kurniawan, Samsuryadi Samsuryadi, Fatma Susilawati Mohamad, Harma	
Oktafia Lingga Wijaya, Budi Santoso	
Department of Computer System Engineering, Faculty of Engineering Science, Universitas Bina Insan	
Department of Informatics Engineering, Faculty of Computer Science, Universitas Sriwijaya	
Department of Information Technology, Faculty of Informatics and Computing, University Sultan Zainal Abidin	
Department of Information System, Faculty of Engineering Science, Universitas Bina Insan	
Department of Informatics, Faculty of Engineering Science, Universitas Bina Insan Innovative bio-inspired solar cells using fly ash-based dye-sensitized cells with fruit	221 - 228
extract enhancements and Averrhoa bilimbi electrolyte Retyo Wizi Nafa Utami, Tresna Dewi, Indrayani Indrayani	
Applied Master of Renewable Energy Engineering Department, Politeknik Negeri	
Sriwijaya Electrical Engineering Department, Politeknik Negeri Sriwijaya, Indonesia	
Civil Engineering Department, Politeknik Negeri Sriwijaya, Indonesia Human vs machine learning in face recognition: a case study from the travel	229 - 240
industry	220 240
Regina Lionnie, Vidya Hermanto	
Department of Electrical Engineering, Faculty of Engineering, Universitas Mercu Buana PT Panorama JTB Tours Indonesia	
i i i anorama vib iours muoriesia	

Indonesia rupiah currency detection for visually impaired people using transfer learning VGG-19	241 - 250
Raissa Alfatikarani, Laras Suciningtyas, Genta Garuda Bimasakti, Faqisna Putra Mardhatillah, Jessie R. Paragas, Hapsari Peni Agustin Tjahyaningtijas Bachelor of Electrical Engineering Study Program, Faculty of Engineering, Universitas Negeri Surabaya	
Department of Electrical Engineering, Universitas Negeri Surabaya Department of Information Technology, Eastern Visayas State Universit Department of Electrical Engineering, UCE DIC, Universitas Negeri Surabaya	
Experimental investigation on slope runoff, sediment, and hydraulic parameters	251 - 258
under different underlying surface	
Siti Norhafizah Hamizak, Zuliziana Suif, Jestin Jelani, Nordila Ahmad, Muhammad Izzul Akhtar	
Department of Civil Engineering, Faculty of Engineering, National Defence University of Malaysia	
Ministry of Defence	
Mineralogical analysis of plutonic and volcanic rocks at selected slope sections of the Kuala Lumpur-Karak Highway	259 - 267
Nurul Afiffah Khairulazman, Jestin Jelani, Zuliziana Suif, Mohd Rozi Umor, Nur Anati Azmi, Zainuddin Md Yusof, Nordila Ahmad, Abd Akram Haikal Abd Halim, Qalam A'zad Rosle	
Civil Engineering Department, Engineering Faculty, National Defence University of Malaysia	
Earth Science and Environment Department, National University of Malaysia Civil Engineering Department, Engineering Faculty, University of Putra Malaysia Department of Mineral and Geoscience Selangor/Federal Territory	