

# **2022 IEEE 8th International Conference on Smart Instrumentation, Measurement and Applications (ICSIMA 2022)**

**Melaka, Malaysia  
27-28 September 2022**



**IEEE Catalog Number: CFP22YAG-POD  
ISBN: 978-1-6654-8801-3**

**Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22YAG-POD
ISBN (Print-On-Demand):	978-1-6654-8801-3
ISBN (Online):	978-1-6654-8800-6
ISSN:	2640-6543

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com



# THE 8<sup>TH</sup> INTERNATIONAL CONFERENCE ON SMART INSTRUMENTATION, MEASUREMENT AND APPLICATION

MELAKA, MALAYSIA  
27-28 SEPTEMBER 2022

## Table of Contents

<b>Chair Welcome Message</b>	vi
<b>Organizing Committee</b>	vii
<b>List of Reviewers</b>	viii
<b>Keynote 1: Requirement Engineering for Quality Instrumentation and Control Systems</b> Prof. Ts. Dr. Massila Kamalrudin	xi
<b>Keynote 2: Autonomous Vehicle Landscape in Malaysia</b> Assoc. Prof. Dr. Hairi Zamzuri	xii
<b>Keynote 3: Introduction to Autonomous Vehicle</b> Prof. Dr. Daniel Watzenig	xiii
<b>Effects of Ruqyah Recitation During Phasmophobia (Fear of Ghosts) Attacks: An EEG Analytical Approach</b> Sairul Safie, Mohd Aimullah Mohd Taib, Noor Huda Ja'afar	1
<b>Performance of the Barzilai-Borwein fixed-step optimization approach in non-invasive microwave imaging</b> Tareq F A Zanoon	5
<b>Self-Adaptive Threshold Clustering in Abnormal Cardiac Beat Detection on Lightweight Embedded Devices</b> Diem Thi Tran, Quoc Ngoc Tran, Thi Thu Khiết Dang, An Dong Bui	10
<b>Convolution Neural Network Model for Image Classification of Graphene Oxide Thin Films Sheet Resistance</b> Marianah Masrie, Zuriati Janin, Rosidah Sam, Norhafizah Burham, Siti Aishah Mohamad Badaruddin, Ashraf Zulkifli	16
<b>Self-Recovery in Fragile Image Watermarking Using Integer Wavelet Transform</b> Ferda Ernawan, Afrig Aminuddin, Danakorn Nincarean Eh Phon, Emad Addin Alsheikh, Adi Wibowo	21
<b>Deep Learning Evaluation Using Receiver Operating Curve (ROC) for Footprint Biometric Authentication</b> Sairul Safie, Zulhaimi Bin Mohammad, ts, Rusmawarni Ramli	26
<b>Photovoltaic (PV) Watering Plant System With Internet of Things (IoT)</b> Muhamad Irfan A'ffan, Azri Adi Arbai, Ir. Ts., Anis Fariza Md Pazil	30
<b>Development of Self Sustainable IOT Based Low Cost UV Index Monitoring Station</b> Chee Wern Hew, Rodney H.G. Tan	36
<b>Development of a IoT Based Low Cost Wearable Smart Health Monitoring System for Elderly</b> Chee Wern Hew, Manickam Ramasamy	42

<b>Mobile Flood Detector Alert System</b> Mohd Zaki Ayob, Muhammad Syarifuddin A. Rahim	48
<b>The impact of ICT in shaping smart urbanization on environmental quality: Evidence from Advanced Countries</b> Hui Shan Lee, Ping Xin Liew, Choon Wei Low, Wai Mun Har	53
<b>Authentication of IoT in Smart City Applications</b> Othman Omran Khalifa, Farah Abdul Rahman, Haidawati Nasir, Danial Fareez Japar	58
<b>Computation of Number of charges required for Automated Guided Vehicles with multiple time constraints</b> Haafizah Rameeza Shaukat, Muhammad Shaukat	64
<b>Automated Control and Monitoring of an Upgraded Laboratory-Scaled Water Distribution System</b> Anis Nadiyah Husna Hasnu Al Hadi, Shafishuhaza Sahlan, Rickey Ting, Muhammad Fadzil Ab. Rahim, Mohamad Addeen Hafizi Hariri, Khairul Ijlal Rosli	70
<b>LSTM and Evans model for next 24 hours solar photovoltaic power output forecasting</b> Kossoko Babatoundé Audace Didavi, Richard Agbokpanzo, Macaire Agbomahena	74
<b>Smart Lamp Control Based on User Behavior for Two Lamps Using Classification and Regression Tree (CART) Algorithm</b> Aditya Nugraha, Casi Setianingsih, Randy Saputra, Raudhatul Rafiqah Asshyahddini, Nurhafidz Farid Abdul Aziz	79
<b>Evaluation of the Smoked Machine with Dual Heating Sources</b> Lidyana Roslan, Annisa Jamali, A.J., Ana Sakura Zainal Abidin, Abg Mohd Nizam Abg Kamaruddin, Rudiyanto Philman Jong, Rasli Muslimen, Mohd Syahmi Jamaludin, Mohd Zulhatta Kifli, Shahrol Mohamaddan	85
<b>Accurate Broadband Calibration of Input Impedance for Coaxial Tips Based on RF I-V, and Related Application to Dielectric Evaluation for Liquids</b> Kouji Shibata, Koichi Tokita, Kohei Fujiwara	90
<b>A New Modeling Approach to Process the Sensors Communication based on Their Locations</b> Saad Talib Hasson, Dheyab Ibrahim, Princy Johnson	96
<b>Accuracy Improvement of Low-Cost GPS Receivers Using Decision Tree Algorithm</b> Belen Septian, Irwan Irwan, Md. Misbahuddin	101
<b>Covid-19 Symptoms Detection System for Campus Access using WSN</b> Hajar F Safar, Marwa M. Alkandari, Sara F. Almutairi, Asayel S Alshmmari, Hossam Ahmed, O., Duaa B. Alzarjawi	106
<b>Indoor Localization Based on BLE Wireless Sensor Network</b> Nhat Minh Bui, Dai Duong Nguyen, Minh Thuy Le, Quoc Cuong Nguyen	110
<b>Pattern-Driven 4D Printed PLA Actuators</b> Wei Han Lee, Yousif Saad Alshebly, Mohamed Sultan Mohamed Ali, Marwan Nafea	116
<b>Design, Simulation and Fabrication of 3D Printing Mold for Rapid Production (PMRP) of Microfluidic Channel</b> Azman Abdul Aziz, Mohd Azraie Mohd Azmi, Azleena Kamarul Bahrain, Abdul Halim Abd Rahman, Mohd Aswadi Alias, Ismail Adam	122
<b>Effect of bismuth flux on the optical and morphological properties of GaAsBi grown by Molecular Beam Epitaxy</b> Faezah Harun, John David, Robert Richards	127

<b>Evaluation of Portable Potentiostats for Electrochemical Measurements: Voltammetry and Impedance Spectroscopy</b>	132
Muhammad Afiq Abdul Ghani, Anis Nurashikin Nordin, Rosminazuin Ab Rahim, Teddy Surya Gunawan, Zainiharyati Mohd Zain	
<b>Firefighting Robot Based On IoT and Ban Levels Technique</b>	138
Zuriati Janin, Ahmad Aizat Abdul Rahman, Rosidah Sam, Marianah Masrie, Teddy Surya Gunawan, Farah Abdul Rahman	
<b>Comprehensive Ultrawideband MIMO Antenna Analysis for Mutual Coupling Reduction</b>	143
Praveen Kumar, Tanweer Ali, Manohara Pai	
<b>Obstacle Existence Impact of Solid Structures on Urban Highway V2R Communication: A Simulation Study on Federal Highway, Malaysia</b>	148
Nurshahrily Idura Ramli, Arief Fahmi Mohd Fuad, Mohd Faisal Ibrahim, Mohd Izani Bin Mohamed Rawi	
<b>A Frequency and Time-Domain Study of a UWB Antenna with C-band and WLAN Notching Characteristics</b>	154
Praveen Kumar, Tanweer Ali, Manohara Pai	
<b>Investigation of Fluid Flow System Performance for Biosensor Application</b>	159
Muhammad Khairul Faisal Muhammad Atan, Rosminazuin Ab Rahim, Anis Nurashikin Nordin, Teddy Surya Gunawan, Zainiharyati Binti Mohd Zain	
<b>Machine Learning Models for Coplanar ECT</b>	163
Reeda Al Saintbai, Sacha Hakim, Paul Karim Khaled, Ali Wehbi, Mahmoud Altrabolsi, Imad H Elhajj, Daniel Asmar	
<b>On the generalized eigenvalue problem for robust coil sensitivities of MRI</b>	169
Hsin-Chia Chen, Tzu-Hsueh Tsai, Hao Chiao Yang, Yu-Chieh Chao, Chih-Ching Chen, Hing-Chiu Chang, Hsiao-Wen Chung, Chin-Kuo Chang, Wei-Hsuan Yu, Feng-Nan Hwang, Jyh-Miin Lin, Martin Graves	
<b>Comparative Analysis of ML-CSC Based CS-MRI Framework With State of the Art</b>	175
Syyed Saadain, Jawad Shah, Abdul Wahid Tareen, Kushsairy Kadir	
<b>Respirator with Air Blower and Air Quality Detector</b>	181
Elsheikh M A Elsheikh, Muhammad Abdul Hakiim Rahman	
<b>Automatic Watering System for Smart Agriculture using ESP32 Platform</b>	185
Teddy Surya Gunawan, Nur Najiehah Kamarudin, Mira Kartiwi, Mufid Ridlo Effendi	
<b>Development Sanitizer Sprinkler For Automated Guided Vehicle (AGV)</b>	190
Elsheikh M A Elsheikh, Haziq Zulkiflee	
<b>Development of Loose Fruit Collector System for Palm Oil</b>	196
Muhammad Izzul Irfan, Wan Zuha Wan Hasan, Hafiz Rashidi Ramli, Muhammad Farhan Mustafa, Ahmed Fareed Japar, Kushsairy Kadir	
<b>Intelligent Traffic Lights using Q-learning</b>	200
Muhammad Aminuddin Mohd Yusop, Hasmah Mansor, Teddy Surya Gunawan, Haidawati Nasir	
<b>Smart Fertilizer Mixer System for Fertigation</b>	205
Roshahliza M. Ramli	
<b>Modeling and Analyzing of Photovoltaic Solar Power Systems using PVsyst</b>	211
Nurul Afiqah Shamsul, Mohd Azraie Mohd Azmi, Muhammad Isyraq Azaman	

<b>A Battery Powered 3MW Matrix Inverter As A Black Start Unit To Replace Diesel Powered Black Start Generator In A Grid Connected Power Generation Plant</b> Ahmad Syukri Mohamad	217
<b>Uncertainty Analysis in Building Energy Measurement with a Case Study</b> Mohammad Mehdi Salehi Dezfouli, Kushsairy Kadir, Kamaruzzaman Sopian, Alireza Dehghani-Sanj	223
<b>The Covid-19 Total Lockdown Effects on Grid Energy Demand: A Malaysia Experience</b> Ahmad Syukri Mohamad	228
<b>Active Vibration Control of Flexible Manipulator using Genetic Algorithm with Parameter Exchanger</b> Hanim Mohd Yatim, Mat Hussin Ab Talib, Intan Z. Mat Darus, Muhamad Sukri Hadi, Mastura Ab Wahid, Muhammad Haikal Abu Bakar	232
<b>Intelligent PID Controller Tuned by Bacterial Foraging Optimization Algorithm for Vibration Suppression of Horizontal Flexible Structure</b> Aizat Ikmal Abd Raof, Muhamad Sukri Hadi, Annisa Jamali, A.J., Hanim Mohd Yatim, Mat Hussin Ab Talib, Intan Z. Mat Darus	237
<b>Intelligent Model for Endpoint Accelerations of Two link Flexible Manipulator Using a Deep Learning Neural Network</b> Zidan Abdulghani, Intan Z. Mat Darus, Annisa Jamali, A.J.	242
<b>Development Of Android-Controlled Ultraviolet Floor Sanitizer Robot</b> Izanoordina Ahmad, Husna Nabihah Awang, Siti Marwangi Mohamad Maharum, Zuhanis Mansor, Aizat Ramli, Azman Abdul Aziz	247
<b>Development of Video-Based Emotion Recognition System using Transfer Learning</b> Teddy Surya Gunawan, Muhammad Nuruddin Muktaruddin, Mira Kartiwi, Yasser Asrul Ahmad, Tina Dewi Rosahdi, Ulfiah Ulfiah	252
<b>Performance Comparison of Various YOLO Architectures on Object Detection of UAV Images</b> Teddy Surya Gunawan, Islam Mohamed Mahmoud Ismail, Mira Kartiwi, Nanang Ismail	257
<b>Analysis of Ground FFB Detection via Real Sense Camera</b> Muhammad Syamil Aizat, Wan Zuha Wan Hasan, Muhammad Farhan Mustafa, Muhamad Saufi Mohd Kassim, Kushsairy Kadir	262
<b>Development of Visual Dashboard for River Monitoring System</b> Yasser Asrul Ahmad, Teddy Surya Gunawan, Muhammad Hisyamuddin Mohd Rasidi Al Munir, Nelidya Md. Yusoff, Mira Kartiwi, Hasmah Mansor	267
<b>Empirical Study of Utilizing the Information Retrieval in Similarity Checker Tools based on Academic Violation Findings</b> Zulmi Ramdani, Leli Alhapip, Anikmah Al Mutoharoh, Andi Amri, Sarbini Sarbini, Deni Hadiana, Jaka Warsihna, Bagus Hary Prakoso	273
<b>Malaria Parasite Detection and Classification using CNN and YOLOv5 Architectures</b> Wan Rasyidah Wan Mohd Razin, Teddy Surya Gunawan, Mira Kartiwi, Nelidya Md. Yusoff	277
<b>Parameter identification of DC motor model based on improved dynamic forgetting factor recursive least squares method</b> Dongxian Gao, Shanqiang Wu, Jiamin Yu, Maolong Wang, Yucheng Wang	282
<b>Optimized PID Controller for Upgraded Water Distribution System Utilizing Swarm Intelligence</b> MAX ALEXANDER Robert, Mohamad Hafis Izran Ishak, Shafishuhaza Sahlan, Muhammad Fadzil Ab. Rahim, Rickey Ting, Nur Fathen Amira Kosmani, Khairul Ijlal Rosli, Mohamad Shukri Abdul Manaf	287

<b>Web-Based Monitoring and Control of A Lab-Scaled Water Distribution System</b>	293
Shafishuhaza Sahlan, Khairul Ijlal Rosli, Mohamad Shukri Abdul Manaf, Jun Yi Low, Sophan Wahyudi Bin Nawawi	
<b>Applied the First Principles study structural and electronic properties of Cobalt-Adsorbed armchair silicene nanoribbons</b>	298
Thanh Tung Nguyen, Nguyen Xuan Hao, Nguyen Phuong Duy Anh	
<b>Haze Attenuation Rate Measurement and Analysis in Malaysia for the Range of 24 GHz to 30 GHz</b>	303
Siti Fatimah Nordin, Zuhanis Mansor	
<b>Measurement of Air Conditioning and Mechanical Ventilation Command Temperature to Control the Environment of Smart Building</b>	308
Mohammad Miqdad Abdul Aziz, Haziq Kamarul Azman, Kushsairy Kadir, Kanendra Naidu	
<b>Fuzzy Logic Controller of Indoor Air Quality Monitoring and Control System for Risk Reduction of COVID-19 Transmission</b>	313
Muhammad Izharuddin Hishamuddin, Hasmah Mansor, Maryam Zahaba, Nelidya Md. Yusoff, Teddy Surya Gunawan	
<b>Optimization and Prediction of Residents' Daily Load Curves Based on the Method of Bayesian Network and Interpolation</b>	318
Jinjun Xie, Cheng Zhao, Xia Tong, Dapeng Duan, Xuecheng Li, Yuan Chi	
<b>Study on feedback stabilization technology of acetylene gas photothermal interferometric sensing system</b>	324
Erxi Wang, Guanqun Sun, Defu Cai, Chen Rusi, Li Wan	
<b>Nondestructive Testing and Evaluation of Smart Textile Sensors using Embedded Systems</b>	329
Phillip Petz, Florian Eibensteiner, Josef Langer	
<b>Design and Performance Studies of Analog Linearizers for Thermistors</b>	335
Safer S S, Chandrika Sreekantan Anoop, Radhika V n	
<b>Implementation of Arduino-Based Body Temperature and Olfactory Detector Automatic Door</b>	341
Muhammad Amin Bakri, Ahmad Faizal, Seta Samsiana, Eki Hamidi	
<b>Development of Hydroponics System and Data Monitoring Using Internet of Things</b>	345
Nur Anas Sobri, Izanoordina Ahmad, Siti Marwangi Mohamad Maharum, Zuhanis Mansor, Abdul Halim Abd Rahman, Azman Abdul Aziz	
<b>Prototype Development of an IoT Health Monitoring Device for Elderly Patient</b>	350
Nurul Atiqah Hasman, Siti Marwangi Mohamad Maharum, Izanoordina Ahmad, Zuhanis Mansor	
<b>Author Index</b>	355