2024 20th IEEE International Colloquium on Signal Processing & Its Applications (CSPA 2024)

Langkawi, Malaysia 1-2 March 2024



IEEE Catalog Number: CFP2479G-POD ISBN: 979-8-3503-8232-7

Copyright © 2024 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: CFP2479G-POD ISBN (Print-On-Demand): 979-8-3503-8232-7 ISBN (Online): 979-8-3503-8231-0

ISSN: 2836-418X

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 curran@proceedings.com E-mail:

Web: www.proceedings.com



Table of Contents

Table of Contents

Organizing Committee

Reviewers

	Page
Paper Title & Authors	
ID2 A Time-Stepper Neural Network Model for the Maximum Likelihood Estimation of Epidemic Parameters Wai Meng Kwok, George Streftaris and Sarat Chandra Dass	1
ID3 Time-Frequency Signature of Pre-Lightning Pulses Fumihiko Ishiyama, Atsushi Nagao, Toshihisa Masuda and Masato Maruyama	7
ID4 Redesigning the Joint SPRT Mean and Dispersion Control Chart Based on Mismatched In-Control Performances Jing Wei Teoh, Wei Lin Teoh, Laila El-Ghandour, Zhi Lin Chong and Sin Yin Teh	12
ID9 IoT-Enabled Remote-Controlled Raft for Enhanced Water Quality Assessment Thattapon Surasak, Kotcharat Kitchat and Nattagit Jiteurtragool	18
ID10 Investigating Technology Issues for Smart City Development Vernika Agarwal, Zoubida Benmamoun and Misbah Anjum	24
ID11 IRAG: Iterative Retrieval Augmented Generation for SLU Hao Yang, Min Zhang and Daimeng Wei	30
ID13 Cloud Seeding Potential Areas From Remote Sensing of Low-Level Cloud Siti Nabila Shamsul Anuar, Rohayu Haron Narashid, Tajul Rosli Razak, Suhaila Hashim, Ashnita Rahim and Sharifah Norashikin Bohari	35
ID20 Optimizing the Integration of Gravity Data Inputs for Geoid Modelling over Peninsular Malaysia Afreena Nisha Mohd Zamri, Muhammad Faiz Pa'suya, Ami Hassan Md Din, Abd Manan Samad, Nurul Shafiqah Hazelin Noor Azmin and Noorhurul Ain Othman	41
ID21 Development of Gravimetric Geoid Over Peninsular Malaysia using the Most Recent Global Geopotential Model Nurul Shafiqah Hazelin Noor Azmin, Muhammad Faiz Pa'suya, Ami Hassan Md Din, Noorfatekah Talib, Noorhurul Ain Othman and Afreena Nisha Mohd Zamri	47

ID23 Optimizing Inventory Control in Supply Chain Management Khaoula Khlie	53
ID24 FPGA(ZCU104) Based Energy Efficient Accelerator for MobileNet-V1 Yanamala Rama Muni Reddy, Pullakandam Muralidhar, G. N. V. Satya Narayana and Dumpala Jagan	57
ID30 Hybrid Graph Neural Networks with LSTM Attention Mechanism for Recommendation Systems in MOOCs Luo Hao, Sina Abdipoor, Li Qing and Xu Litao	63
ID31 Comparative Analysis of Face Recognition Based on Multiple Feature Domains Eman Jasim Mohammed and Ismail Taha Ahmed	69
ID32 Detecting Problematic Vibration on Unmanned Aerial Vehicles via Genetic-Algorithm Methods Mohd Sharif Zakaria, Mohammad Fadhil Abas, Fatimah Dg Jamil, Norhafidzah Mohd Saad, Addie Irawan Hashim and Dwi Pebrianti	75
ID36 Optimizing Frequency Stability in Power Systems through Particle Swarm Optimization-Based Control Strategies Sing Hsia Yeoh, Kah Haur Yiauw, Sook Yee Yip and Zhi Hong Kwan	79
ID39 Fingerprint Sensor Integration in Smart Healthcare Emergency App: Enhancing Ambulance Navigation through Emergency Route Highlighting Azwati Azmin, Samihah Abdullah, Zafirah Faiza, Najwa Rawaida Ahmad@Ahmad Fauzi, Nor Shahanim Mohamad Hadis and Wan Rahiman	85
ID40 Working Memory Models and Assessment Methods: A Review Nabila Ameera Zainal Abidin, Ahmad Ihsan Mohd Yassin, Megat Syahirul Amin Megat Ali, Wahidah Mansor, Mirsa Nurfarhan Mohd Azhan, Muhammad Fakharul Radzy Mohd Rozlan, Aisyah Hartini Jahidin, Zulkifli Mahmoodin and Farzad Eskandari	90
ID43 Development of Resilience Assessment System using Electroencephalogram and Virtual Reality	96
Cheok Xuan Choong, Rumaisa Abu Hasan and Tong Boon Tang ID44 Integrating Large Language Models and Machine Learning for Fake News Detection Ting Wei Teo, Hui Na Chua, Muhammed Basheer Jasser and Richard T. K. Wong	102
ID45 A Clustering Algorithm Employing Salp Swarm Algorithm and K-Means Bibi Aamirah Shafaa Emambocus, Muhammed Basheer Jasser, Lim Cher Zet, Samuel-Soma M. Ajibade, Richard T. K. Wong, Hui Na Chua and Ahmad Sahban Rafsanjani	108
ID46 Analysis of Machine Learning (ML) and Internet of Things (IoT): A Scientometric Review Samuel-Soma M. Ajibade, Muhammed Basheer Jasser, Rosie Fe B. Legaspino, Anabella R. Gimeno, Leomar A. Ypanto, Jeem Clyde C. Baird and Anthonia Oluwatosin Adediran	114

ID47 Enhancing Rainfall Prediction Accuracy through XGBoost Model with Data Balancing	120
Techniques Dias Daffa Wiwaha, Davin Adha Gafyunedi, Zaidan Muhammad Mahdi, Isno Wahno Putro, Brahmantya Aji Pramudita and Dhoni Putra Setiawan	
ID51 Effect of Mixing Time and Frequency-Domain Objectives in Detecting Problematic Vibration on Unmanned Aerial Vehicles via Barnicle Mating Optimization Fatimah Dg Jamil, Mohammad Fadhil Abas, Mohd Sharif Zakaria, Norhafidzah Mohd Saad and Mohd Hisyam Mohd Ariff	126
ID53 Grey Box Non-Recursive System Identification for a Third Order Electro-Hydraulic Actuator System: From Simulation to Practical Approaches Chong Chee Soon, Rozaimi Ghazali, Muhamad Fadli Ghani, Siaw-Hong Liew, Howe Cheng Teng, Nur Farhanah Zulkipli, Chong You Beh and Mohd Saidi Hanaffi	131
ID54 Classification of Jengkol (Archidendron Pauciflorum) Varieties using Deep Learning Agus Pratondo, Akbarsyah Nashrullah, Farras Mufid Ibrahim and Andri Agustav Wirabudi	137
ID55 Classification of Ficus Carica Variants using Transfer Learning Agus Pratondo, Muhammad Kemal Pasha, Muhammad Rafi Zhafran, Muhammad Rifqi Firdaus and Abrar Zharifan Syah	143
ID57 Control Strategies for the Quadruple Tank System: A Comparative Study of PID and MPC Ernadia Rosman, Sazuan Nazrah Mohd Azam and Mashitah Che Razali	149
ID59 Comparative Study of Microwave Absorption Properties between Raw Rubber Wood Dust and Carbonized Wood Dust Lightweight Cement Brick Shafaq Mardhiyana Mohamat Kasim, Hasnain Abdullah, Nazirah Mohamat Kasim, Mohd Nasir Taib, Ali Othman and Basharudin Abdul Hadi	155
ID63 Isolated Bridgeless SEPIC PFC Converter for EV Battery Charging Application Elizabeth Paul, S. Mageshwari and Nandithakumari	161
ID65 Robust Spatial Domain Features for Detecting Spliced Image Ismail Taha Ahmed, Falah Amer Abdulazeez and Baraa Tareq Hammad	167
ID66 Navigating Tversky Loss Function Hyperparameter Spaces using Particle Swarm Optimization for Myocardial Scar Segmentation Dayang Suhaida Awang Damit, Siti Noraini Sulaiman, Muhammad Khusairi Osman, Noor Khairiah A. Karim, Noor Fadzilah Razali and Mohd Ikmal Fitri Marzuki	173
ID68 IoT Smart Door System with Motion Sensing and Facial Recognition Muhammad Kamil Hamzah, NorakmarArbain Sulaiman, Murizah Kassim, Shuria Saaidin and Suhaili Beeran Kutty	178

ID70 Analysis and Optimization of Care-purpose Drone For Medical-Based Applications Muhammad Hariz Mohd Hanafiah, Safaa Najah Saud Al-Humairi, Mohamad Amirul Aznil Mohd Taib and Adam Amril Jaharadak	184
ID76 Exploring Islamic Architecture Through Virtual Realms: A 3D Open World Simulator Game Approach for Engaging and Educating Noor Hafizah and Muhammad Farhan Mohd Redzuan	190
ID77 Hybrid Optimization Algorithms for Economic and Emission Dispatch Optimization Wei Wen Lee, Mohd Ruzaini Hashim and Chin Kim Gan	196
ID78 Preliminary Study on the Carbon Footprint Awareness & the Analysis among University Students in Malaysia Rusyaizila Ramli, Kristo Radion Purba and Irina Baydarova	202
ID79 Improving Object Detection in Videos: A Comprehensive Evaluation of Faster R-CNN Employed in Partial Occlusion Handling Jun Jie Yap, Yoke Leng Yong, Muhammed Basheer Jasser, Samuel-Soma M. Ajibade and Ismail Ahmed Al-Qasem Al-Hadi	207
ID82 Gravimetric Geoid Modeling for East Malaysia using the LSMSA Method Noorhurul Ain Othman, Muhammad Faiz Pa'suya, Ami Hassan Md Din, Mohamad Azril Che Aziz, Nurul Shafiqah Hazelin Noor Azmin and Afreena Nisha Mohd Zamri	213
ID83 Deepfake Characterization, Propagation, and Detection in Social Media - A Synthesis Review Ananya Sudarsan, Hui Na Chua, Muhammed Basheer Jasser and Richard T. K. Wong	219
ID84 Revolutionizing Operational Excellence: A Comprehensive Approach to Modernizing Secure Remote Access	225
Rasidi Mohamed, Eugene Lee Kok Chai, Effendy Haziz and Mohd Hezri Fazalul Rahiman ID85 Instrument Reliability using Predictive Analytics (IRIS) Effendy Haziz, Rasidi Mohamed, M. Feizal M. Ghazali and Mohd Hezri Fazalul Rahiman	230
ID86 Detection and Localization of Partial Discharge in Switchgear using Online Partial Discharge Identification Muhamad Arif Fahmie Muhammad, Mohd Hezri Fazalul Rahiman, Mohd Helmy Halim Abdul Majid and Normiza Masturina Samsuddin	236
ID89 The Intersection of Technology and Education: An Immersive Interior Design Digital Application as an Innovative Teaching Tool Mohd Syahmi Suhaimi, Noor Hafizah Mahamarowi, Ahmad Fathi Azli and Muhammad Nur Idzrafil Narizal	242
ID90 Meteorological Subset Selection for Multidimensional Wind Speed Prediction Rose Ellen N. Macabiog and Jennifer C. Dela Cruz	248

ID91 Unleashing the Potential of Blockchain and Internet of Things (IoT) Convergence: A Comprehensive Study Khairunnisa A. Kadir, Nur Haliza Abdul Wahab, Kristoko Dwi Hartomom and Siti Zaleha Harun	254
ID92 Enhancing Virtual Reality Education with Low-Bandwidth 360-Degree Video Khairunnisa A. Kadir, Nur Haliza Abdul Wahab, Mohd Shahrizal Sunar and Siti Zaleha Harun	260
ID93 Infrastructure-Based Communication Protocol Towards Multiple Quadrotor Drones' Transportation Muhammad Aiman Haqiemi Mohd Shaipul, Kishore Bingi and Rosdiazli Ibrahim	264
ID94 Analysis of Initial Z-R Relationship Using Radar Reflectivity Data in Tropical Region Khairunnisa Aziding, Khairayu Badron and Ahmad Fadzil Ismail	270
ID95 Advancing the Music Industry with Blockchain Technology: A Systematic Literature Review Using PRISMA Method Gerral Chandra Wiguna, Richard Win Putra and Dicky Hida Syahchari	275
ID98 Locational Analysis of Refuelling Stations using p-Median Nuridawati Baharom, S. Sarifah Radiah Shariff and Noryanti Nasir	281
ID99 Internet of Thing-based Ambience Automation for Optimizing Patient's Comfort Md. Rokonuzzaman, Sabbir Ahmed and Wen-Shan Tan	287
ID100 A Self-adaptive Step-size Search Algorithm for the Cardinality Constrained Portfolio Optimisation Problem Zi Xuan Loke, Say Leng Goh and Jonathan Likoh	292
Author's Index	298