

International Conference on Green Energy, Computing and Intelligent Technology (GEn-CITy 2024)

IET Conference Publications 908

Iskandar Puteri, Malaysia
11-13 December 2024

ISBN: 979-8-3313-2203-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2024) by the Institution of Engineering and Technology
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact the Institution of Engineering and Technology
at the address below.

Institution of Engineering and Technology
Futures Place, Kings Way
Stevenage, Hertfordshire
U.K. SG1 2UA
United Kingdom

Phone: +44 (0)1438 313311

www.theiet.org

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
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

Potential Criteria in Multi-Criteria Evaluation of a Substation Site Selection	1
<i>Thandeka L. Mbundu, Nhlanhla Mbuli</i>	
Delphi Technique in Identifying Set of Criteria for Selection of Maintenance Strategy for Large Power User Metering System.....	7
<i>Keabaone Letimela, Nhlanhla Mbuli</i>	
Smart IoT-Integrated Weather Analytics System.....	13
<i>Lim Shi Xun, Suresh Merugu, Himani Maheshwari</i>	
A Secure and Automated Student Attendance Tracking System Utilizing NFC Technologies for Junior High School Students at the UST	25
<i>Jansen Marion H. Du, Patricia Marian D. Gervacio, Karl Andrei Santisteban, Paolo Luigi S. Solacito, Maricel A. Balais</i>	
Enhancement and Implementation of Network Infrastructure and Security of General Miguel Malvar Elementary School	31
<i>Paul Roman C. Bagtas, Dwight Jenel A. Feliciano, Angeliko O. Bernard, Michael Hans B. Tabotabo, Maricel A. Balais</i>	
Towards Formal Modeling and Verification of UML Class Diagrams Using First-Order Logic and Resolution.....	37
<i>Aditya Bagoes Saputra, Thomas Anung Basuki, Jimmy Tirtawangsa</i>	
AUST: Ask - UST Chatbot for UST - ICT	44
<i>Yehudi Jascha C. Ballesteros, Karlos Andrew P. Lazaro, Gerome Eleubert Q. Rosal, Vincent Russell N. Sobreviga, Mylene J. Domingo</i>	
Exploration of Explicit Regularization Terms in Deep Image Prior.....	50
<i>Cheng Zhang, Kin Sam Yen</i>	
BEYOND the ARCH: A Web and Mobile Alumni Record Verification System for the University of Santo Tomas Office of the Registrar.....	56
<i>Azzilhea Angel C. Samson, Jean Khladyn Stefanie L. Abarquez, Jasper Noel J. Llave, James Anthony P. Sing, Noel E. Estrella</i>	
Real-Time Object Detection on DJI Ryze Tello Quadrotor Drone with YOLO and SSD Algorithms	66
<i>Aryaan Madhani, Kishore Bingi, Madiyah Omar, Reebea Korah, Gaurav Kumar, B. Rajanarayan Prusty</i>	
Prediction of Battery Remaining Useful Life: An Approach Using Kolmogorov-Arnold Network (KAN).....	72
<i>Kenneth Kong Zhi Yao, W. K. Wong, Lenin Gopal</i>	
Power Transformer Health Index (HI) Prediction Using Kolmogorov-Arnold Network	77
<i>Sylvia Law Hui Ling, W. K. Wong, Lenin Gopal, I. M. Chew, Rama Abirami K</i>	
An IoT-Based Smart Farming Solution for Sustainable Agriculture: Integrating AI, Cloud Computing, and 4G Communication for Enhanced Productivity	83
<i>Mustahoshin Hossain Ahamed Afif, Javid Iqbal, Salim Sadman Borshon, Rashedul Islam Junayed, Sabbir Ahamed</i>	

Theoretical Study of Housing and Electrode Stack Variations for a Lithium-Ion Battery Cell	89
<i>Muhammad Husnat Khalid, Stephan Bihn, Dirk Uwe Sauer, Nisai Fuengwarodsakul</i>	
Development of Plum Ripeness Sorting System Using Colour Sensors	94
<i>Wenjing Chen, Ruiyu Liu, Yiheng Zheng, Zongsheng Li, Wei Hong Lim, Chin Hong Wong</i>	
Development of an IoT -Based Fishpond Water Monitoring System Using Arduino with Enhanced Depth Measurement Accuracy.....	99
<i>Jiayi Qiu, Shuchang Zhang, Shaoyu Zhang, Kaiyu Zhang, Yizhou Yu, Wei Hong Lim, Chin Hong Wong</i>	
Wind Energy Forecasts with Supervised Machine Learning Techniques	105
<i>Mariam Hussain, Kawsar Ahammad, Moshiur R. Noor, Nusrat Sharmin, Sumayea B. Shafiul, Shakarul Islam</i>	
Design and Evaluation of Different Screens in a Wind Tunnel for Flow Management.....	111
<i>Sakwan J. Ater, Basil P. Bautista</i>	
Review of Machine Learning-Based Techniques for Detecting Specific and General Objects	119
<i>Alicia Loh I-Ling, Goh Yu Xiang, Kishore Bingi, Madiah Omar, Rosdiazli Ibrahim</i>	
A Review of Machine Learning and Drone-Based Solar Panel Inspection Techniques	125
<i>Goh Yu Xiang, Alicia Loh I-Ling, Kishore Bingi, Madiah Omar, Rosdiazli Ibrahim</i>	
Leak Detection in Water Carrying Pipe Using a Peak Detector	131
<i>Mostefa M. Ghassoul</i>	
Energy Conservation Potential for Solar Cooker Constructed with 25-PPI Copper Foam Layer as a Porous Absorber	136
<i>Suhaib J. Shbailat, Jenan S. Sherza, Sarmad A. Abdul Hussein, Ahmed F. Khudheyer</i>	
The Impact of Foliar Fertiliser on Oil Palm Trees Using Unmanned Aerial Vehicles (UAV)	142
<i>Tiagrajah V. Janahiraman, Razwan Zakaria, Kamarul A. Muhamed, Kandasamy Kanny, Abdullah Salleh</i>	
Sodium-Ion Battery Cycle Life Prediction Using Machine Learning	151
<i>Linfeng Liu, Filbert H. Juwono, W. K. Wong, Erick Purwanto, Tingyan Jin, Yuyang Zhen</i>	
Steel Defects Classification Based on Vision Attention	156
<i>Kho Jia Ann, Saaveethya Sivakumar, Adelson Lok Thien Chee</i>	
Design and Implementation of a Low-Cost Single-ended Primary-inductor Converter (SEPIC) for Enhanced Maximum Power Point Tracking in a Photovoltaic System	163
<i>Shew Chee Kok, Micol Yu, Vun Jack Chin</i>	
Design and Implementation of a Portable Low-Cost internet-enabled I-V curve Tracer Utilizing Ćuk Converter.....	174
<i>Yi Cherng Tan, Zhi Meng Cheng, Wei Jun Tan, Vun Jack Chin</i>	
AI Jurist: Empowering Legal Knowledge and Practices in India	184
<i>Rupak Kadhare, Rushikesh Shaharao, Achamma Thomas, Gopal Sakarkar</i>	
Comparative Performance of Machine Learning Models for Temperature Prediction in Vanadium Redox Flow Batteries	192
<i>Anxiu Zhang, Filbert H. Juwono, Hongfei Li, Erick Purwanto, W. K. Wong, Linfeng Liu</i>	

Evaluation of Spectrum sliced-FSO Communication System Incorporating Different Modulation Schemes.....	197
<i>Shakal Das, Jannatul Ferdous Sumiya, Nayemur Rahman, Muhammad Towfiqur Rahman, M. Akhtaruzzaman</i>	
Traffic Control System Modelling to Control Traffic Lights Using Smart Camera	203
<i>Silvester D. H. Permana, Grandy Damarneegara, Ketut B. Y. Bintoro</i>	
Laser-Induced Graphene for Moisture and Micro-volume Liquid Sensing.....	209
<i>Xue Chen, Khong Wui Gan, Suan Hui Pu</i>	
Electrical Load Forecasting for Commercial Buildings Using LSTM Based Algorithms.....	214
<i>Noah Y. Woldegiorgish, Kumar Padmanabh</i>	
SVM Classifier Optimisation for Predicting Anomalies in Login Data with SMOTE.....	222
<i>Muh. Satriawan, Zulkifli Tahir, Ady Wahyudi Paundu</i>	
Analysis and Classification of Tomato Leaf Disease Using YOLOV8	228
<i>Marsa Muhammad Ridwan, Sofia Sa'Idah, Muhammad Sabri Mas</i>	
Unmanned Aerial Vehicle Localisation Using RSSI-Based Trilateration.....	235
<i>Shihab Abdelaziz Mohamed Elhassan, Nadhiya Liyana Mohd Kamal, Nurhakimah Norhashim, Zulhilmy Sahwee, Shahrul Ahmad Shah</i>	
Hybrid Feature Optimization – Machine Learning Approach for Predicting Particulate Matter.....	241
<i>Meera Al Hammadi, Lubna Obaid, Mohamed Abdallah, Mohamed Arab, Simon Zerisenay, Fouad Lamghari Ridouane</i>	
Real-Time Dual Shutdown-enabled Environmental Monitoring System for Cell Sites	248
<i>Joyce Anne M. Britanico, Mark Kevin I. Endonilla, Carl Justin R. Ona, Melissa R. Serrano, Ronaldo C. Maaño, Ulrich A. Divina, Hannah A. Balmes</i>	
Design and Implementation of a Secure Network Infrastructure for Enhanced Digital Learning at Mandaluyong High School.....	254
<i>Raphael Jude E. Calderon, Vherbik Troy M. Cardenas, Mallious Josef S. Delos Santos, Raven Divinagracia, Maricel A. Balais</i>	
Wind Farm Sensor Fault Diagnosis Using Artificial Intelligence and Wavelet Transform	262
<i>Mahmoud Aly, Mahmoud Shaaba, Tamer Kasem, Raafat Shalaby</i>	
AOI-Aware Dynamic RL-based HAP-Assisted UAV Charging for Data Collection in WSNS	269
<i>Wissam Baaklini, Nadine Abbas</i>	
Proactive DDoS Attacks Detection Using Deep Learning Techniques.....	275
<i>Ravi Kumar Gurugubelli, Krishna Bhukya, Ramesh Choppa</i>	
Model Compression Using Post-Training Dynamic Range Quantization for Plant Disease Recognition	281
<i>Harry Yuliansyah, Rudy Hartanto, Indah Soesanti</i>	
A Learning Mobile Application and Image Recognition for Children	288
<i>Madeleine Bien T. Angeles, Ryan Patrick T. Lopez, Danyell Ivn E. Pangkatan, Nill Carlos R. Rivera, Mylene J. Domingo</i>	
Fostering a Proficient IoT Workforce in Vietnam: Obstacles and Suggestions	294
<i>Le Thi Kim Tuyet, Hoang Chuduc, Nguyen Quoc Huy</i>	

Low-Speed Flow Oscillations in a Cavity with Slanted Front and Aft Walls	300
<i>Joshua Foo Shyh Yun, Vishal Thiayaka Rajan, Varun Thangamani</i>	
HiSkul: A Website for Florentino Torres High School with Virtual Walkthrough and Chatbot.....	308
<i>Ana Pauline A. Medina, Raqib J. De Lara, Criselle J. Centeno, Marilou B. Mangrobang, Ariel Antwaun Rolando C. Sison</i>	
CMDR: An Artificial Intelligence Card Game Application Using Prominent Philippine Historical Figures	314
<i>Sebastian A. F. Belgica, Gabriel O. M. Cazon, Caleb K. Table, Criselle J. Centeno, Ariel A. R. C. Sison, Jethro L. San Diego</i>	
Enhanced Lathe Tool Positioning Through Wavelet-Based Image Denoising Techniques	321
<i>Shweta Kumari, Charu Pathak, Shruti Vashist</i>	
Enhancing Electrical Performance of Inkjet-Printed Flexible Strain Sensors Through Substrate Surface Coating and Multiphysics Simulation	332
<i>Ishant G. Patil, Shirish Bhima, Phoebe Ying Xi Yeap, Shiau Ying Ch'Ng, Ting Yang Ling, Khong Wui Gan, Suan Hui Pu</i>	
TECHAID: AI-Driven Application for Prognostic Maintenance for Mobile Hardware Using Linear Regression	338
<i>Ansherina T. Alvarez, Joshua Jamir R. Enguio, Criselle J. Centeno, Gaypelyn M. Casiw, Jethro L. San Diego, Anabel Lim</i>	
Harnessing AI for Agriculture Utilizing Color-Condition Camera Sensors and Thermal Imaging Drones for Crop Color-Condition Detection and Predictive Yield Analysis with Inventory Management System	345
<i>Cris Paul Villaflor Guatno, Dean Emmanuel A. Obillo, Jovan Erro Taguinod, Cris Ariel Antwaun Rolando C. Sison, Raymund M. Dioses, Diony S. Abando</i>	
ABCiFY: Enhancing Alphabet Learning Through Image Classification Using Convolutional Neural Network (CNN).....	353
<i>Sophia Kaye G. Domingo, Clarissa V. Dominguez, Stephen E. Espeño, Mark Anthony S. Mercado, Mary Grace D. Nulud, Ariel Antwaun Rolando C. Sison</i>	
PLANTery: An IoT-Based Automated Plant Watering System and Pest Detection Using Convolutional Neural Network (CNN)	359
<i>Sophia A. Maramara, Jayson G. Pisos, Francis Jericho F. Ras, Criselle J. Centeno, Ariel Antwaun Rolando C. Sison, Diony S. Abando</i>	
Smart Pet Micturition Behavior Corrector: Utilization of Computer Vision for Pet Urinary Activity Detection, with Adaptive Deterrence, and Progress Monitoring	366
<i>Marc Gabriel V. Hizole, Justin Razzi V. Panganiban, Criselle J. Centeno, Ariel Antwaun Rolando C. Sison, Vivien A. Agustin, Diony S. Abando</i>	
Performance Assessment of Knowledge Distillation Models Using the Knowledge Retention Score.....	372
<i>Arjay R. Alba, Jocelyn F. Villaverde</i>	
Classification of Random Forest Method on Photovoltaic Temperature and IoT Monitoring for Energy Conversion	380
<i>Habib Satria, Rika Rosnelly, Wanayumini</i>	
Speak-Up: Web-based Speech Disorder Detection System with Recommended Speech Therapy for Grade Four and Five Elementary Students Using Convolutional Neural Network	386
<i>Rick Jayzon R. Rodriguez, Sebastian Kyle T. Tan, Mark Anthony S. Mercado, Ariel Antwaun Rolando C. Sison, Joan F. Lawan, Criselle J. Centeno</i>	

Artificial Intelligence Role and Financial Considerations with Reference to Micro Financing and Banking Services in India.....	392
<i>V. Sreenivas, A. Francis Abraham, A. Kotishwar</i>	
A Clustering Model for Data Transmission Based on Deep Learning for Energy Efficiency Enhancement in Wireless Sensor Networks	397
<i>Vijayakumar Kadumbadi, P. Thirumaraiselvan</i>	
Low-Cost Hardware Solution for PCM/FM Telemetry Data Encoder Based on IRIG-106 Standard	410
<i>Mirza Z. Rahmat, Prapto Nugroho, Dzuhrri R. Utomo, Wahyu Widada</i>	
The Effect of Tax Knowledge, Tax Awareness, Tax Audit, and Tax Rates on Individual Taxpayer Compliance in the Digital Era	416
<i>Muhammad Hadyan Siregar, San Karya, Danang Prihandoko</i>	
A Comparison of Binary and Non-Binary Codes Approaches on the Reliability and Security Performance of Full-duplex Transmission.....	422
<i>Bao Quoc Vuong</i>	
Meta Learning for NOMA-MISO Systems Based Full-duplex Transmission.....	428
<i>Mohammed M. Jameel, Mohamad A. Ahmed</i>	
Performance Comparison of EBG Structured High Gain Microstrip Antennas	436
<i>P. Raveendra Babu, M. Nagaraju Naik, R. Bhargav Ram</i>	
Film Recommendation Using Scenario-Based Approach to Solve the Cold-start Problem for New Users.....	442
<i>Tabita G. E. Simorangkir, Zahir Zainuddin, Ingrid Nurtanio</i>	
Secure Smart Vision: Intelligent Object Recognition System for Visually Impaired	450
<i>Suresh Merugu, Rajesh Yadav, Herbert Raj Perianayagam, George Ghinea</i>	
Kelor: A Mobile Application for Moringa Powder Quality Detection Using CNN Ensemble Transfer Learning (case Study: Moringa Powder).....	458
<i>Nurul Fitrihasari Ramadhani, Ingrid Nurtanio, Mukarramah Yusuf</i>	
Advancements in Computer Vision-Based Assistive Technologies for Visually Impaired.....	465
<i>Kishore Reddy Aduri, P. V. Naganjaneyulu</i>	
Impact of AI-Powered Business Intelligence on Smart City Policy-making and Data-driven Governance.....	475
<i>Sm T. H. Rimon, Mohammad A. Sufian, Zenith M. Guria, Niaz Morshed, Ahmed I. Mosaddeque, Asif Ahamed</i>	
Optimization of PSS Parameters Using Surrogate-Assisted Evolutionary Algorithms Based on KAN	482
<i>Peraphat Boondet, Boonsri Kaewkhum-Ai, Kasin Prokobwitayakit, Sermsak Uatrongjit</i>	
Characterization of Corrosion and Wear for Magnesium-Based Metallic Glass	487
<i>Mathan N, Godwin Premi M S, Yuvashree M, Sherin Christiane S, Jaiganesh. V</i>	
Bibliometric Review of Smart Sensor for Health Monitoring.....	493
<i>Christian V. Halim, Murti Marinah, Dinda A. I. Shafira, Muhammad Y. Dwiyantara, Imam Abadi</i>	
Counting Tilapia Fingerlings Using Mask R-CNN	499
<i>Fatmawati, Ingrid Nurtanio, Zahir Zainuddin</i>	

Enhancing Audio Signal Segmentation for Musical Instruments with Refined MFCC-Based Features	505
<i>Muhammad Syawal Idil Fitrah Baharuddin, Novy Nur R. A. Mokobombang, Indrabayu</i>	
Estimation of State of Charge in a Solar Charging System Using Artificial Neural Networks for Lead-Acid Batteries.....	511
<i>Muhammad Yahya Dwiyantara, Suyanto, Ali Musyafa, Muhammad Khamim Asy'Ari</i>	
Detection and Sequence of Collecting Loose Oil Palm Fruit Using Deep Learning Technique	517
<i>Sheila E. Kakisina, Novy N. R. A. Mokobombang, Indrabayu</i>	
Energy-Efficient Job Shop Scheduling Using Hybrid Mean-variance Mapping Optimization	523
<i>Mohamed Elatly, Noha Shouman, Lamia A. Shihata</i>	
Performance Evaluation of Asymmetric Multicore Processors Using ARM big.LITTLE Architecture in MRI Imaging Reconstruction	529
<i>Sakina Maida Putri, Adnan, Zahir Zainuddin</i>	
Semantic Search System for Name of Government Work Package Using BERT	535
<i>Khaeruddin Asdar, Ingrid Nurtanio, Zulkifli Tahir</i>	
Mental Health Evaluation During Internet Blackouts: A Machine Learning Approach	541
<i>Tariqul Islam, Tahidul Islam, Mohammad Ariful Islam Rafi, Tauhidur Rahman Sakib</i>	
Characterization of Corrosion and Wear for Magnesium-Based Metallic Glass	548
<i>Nay Win Khun, Adrian Wei-Yee Tan</i>	
Early Fusion Techniques for Enhanced Pneumonia Detection in Chest X-Ray Analysis.....	552
<i>Muhammad Dzaki Shidqi, Muhammad Banin Basit, Simeon Yuda Prasetyo, Eko Setyo Purwanto</i>	
Exploring Machine Learning Approaches for Breast Cancer Detection: A Comparative Perspective	558
<i>Louis Oktovianus, Maura A. Sunusmo, Jeffrey Surianto, Kresna B. Waluya, Alvin Linardi, Evander B. Untoro, Ivan S. Edbert</i>	
Boosting Algorithms in Breast Cancer Classification: Accuracy and Performance Metrics Analysis.....	563
<i>Louis Oktovianus, Kresna B. Waluya, Jeffrey Surianto, Alvin Linardi, Maura A. Sunusmo, Evander B. Untoro, Ivan S. Edbert</i>	
Developing an English-To-Indonesian Speech-To-Text as a Foundation for Sasak Language Translation Using the mBART Algorithm.....	568
<i>Arik Aranta, Arif Djunaidy, Nanik Suciati</i>	
Enhancing Stroke Detection in Brain CT Images with Residual Attention Networks.....	574
<i>Sza Sza Amulya Larasati, Shafatyra Reditha Shalsadilla, Fitri Utaminigrum</i>	
Air Pollution Prediction and Classification with a Hybrid ANN-LSTM Model in Modern Cities: A Comparative Study	580
<i>Mohammad Ariful Islam Rafi, Moshir Rahman Sohan, Golam Jilany Rayhan, Md Sadi Iftia Khairul, Abdullah Al Noman, Muntasir Hossain Nadid</i>	
Dropout-Integrated Attention Mechanism in CNN-LSTM Prediction Model for Vehicle-mounted Air Quality Monitoring.....	586
<i>Ceferino V. Llamelo, Ruji P. Medina, Arnel C. Fajardo</i>	

Passive-Active Crosstalk Beyond Low-frequency Breakdown in Mathematical-physical Models of Liquid Crystal Phase Shifters at Low-frequency Applications.....	592
<i>Jinfeng Li, Haorong Li</i>	
Integration of Analytic Hierarchy Process and K-Nearest Neighbor Methods in Athlete Selection in PDBI Banjarmasin City	597
<i>Wanvy Arifha Saputra, Subandi, Arifin Noor Asyikin, Siti Kustini, Yossi Handreyas, Muhammad Fikri Ramadhan</i>	
Government Product Recommendation Systems in e-Katalog: Leveraging Large Language Models with Retrieval-augmented Generation.....	603
<i>Ayu Rosalina Wibowo, Silmi Fauziati, Rudy Hartanto</i>	
Synergizing AI and Blockchain for Efficient, Transparent Patient Data Management and Secure Online Sharing.....	611
<i>Archana Bathula, Suneet K. Gupta, Suresh Merugu, Skandha S. Sanagala</i>	
Capacity Prediction for Lithium-Ion Batteries Using Optimized Long Short-term Memory Networks	621
<i>Wilson Wiranata, Yohanes Calvinus, Filbert H. Juwono, Arul Paruvachi Gurusamy</i>	
Hybridising the Future: Recent Progress on Graphene and Its Hybrid for Sensing, Energy, and Environmental Applications Based on VOSviewer Analysis	626
<i>Rika N. Safitri, Suriani A. Bakar, Muqoyyanah, Wipsar S. B. Dwandaru, Heri Sutanto, Muhammad Sajid, Mohamad H. Mamat, Mohd K. Ahmad, Ratno Nuryadi</i>	
Adaptive Addax-Based Deep Fuzzy Clustering for Face Mask Detection	633
<i>B. Anuradha, Sudhanshu Gupta, Akhil Kumar</i>	

Author Index