

# **2025 International Conference on Artificial Intelligence's Future Implementations (ICAIFI 2025)**

**Yogyakarta, Indonesia  
14 September 2025**

IEEE Catalog Number:  
ISBN:

CFP250Y4-POD  
979-8-3315-5607-5



Copyright © 2025, IEEE

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:    | CFP250Y4-POD      |
| ISBN (Print-On-Demand): | 979-8-3315-5607-5 |
| ISBN (Online):          | 979-8-3315-5606-8 |

**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 |
| Web:    | www.proceedings.com    |

# TABLE OF CONTENTS

|                                                                                                                                                                     |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Addressing Class Imbalance in COVID-19 Chest X-Ray Classification via Data Augmentation and Focal Loss .....                                                        | 1  |
| <i>Anthony Gilles Rudolfo, Joceline Araki, Alexander Agung Santoso Gunawan, Rilo Chandra Pradana</i>                                                                |    |
| Adaptive Tuning of Dynamic Window Approach Using Q-Learning for Warehouse Mobile Robot .....                                                                        | 7  |
| <i>Fadli M. Munthaha, Pranoto H. Rusmin</i>                                                                                                                         |    |
| Improving the Potential and Sustainability Index of Photovoltaic Thermal Through an Indoor Experimental Approach .....                                              | 14 |
| <i>Muhammad Zohri, Prabowo, Suwarno</i>                                                                                                                             |    |
| Network Analysis and Route Optimization of Singapore Train Line Using Origin Destination Smart Card Data During Peak Hours .....                                    | 21 |
| <i>Putu Satria Beratha, I Ketut Dharma Wijaya Kusuma, Alexander Agung Santoso Gunawan</i>                                                                           |    |
| Unsupervised Recognition of Prehabilitation Movements: The Role of Personalised Data and Remote Monitoring .....                                                    | 28 |
| <i>Khalid Al-Naime, Adnan Al-Anbuky</i>                                                                                                                             |    |
| Bird Sound Classification Using Two-Channel Markov Transition Field Transformation Images and Convolutional Neural Networks .....                                   | 34 |
| <i>Tricia Jonina B. Alcisto, William Caleb Arcena Perez, Angie M. Ceniza-Canillo</i>                                                                                |    |
| Behavioral Profiling and AI-Powered Security for IoT Networks in Smart City Environments .....                                                                      | 41 |
| <i>Yugandhar Suthari, Karthik Babu Manam</i>                                                                                                                        |    |
| Novel Paradigm for Privacy-Preserving Data Sharing and Anonymization in Smart Homes .....                                                                           | 47 |
| <i>Kapil Kumar Sharma, Swetha Sekhar, Vinay Venkatesh</i>                                                                                                           |    |
| Optimization of Traffic Signal Control in City X Using a Deep Reinforcement Learning Approach .....                                                                 | 52 |
| <i>Stevia Rossa Winata, Sfenrianto</i>                                                                                                                              |    |
| Machine Learning-Based Prediction of Blood Glucose Levels in Children with Type 1 Diabetes: A Comparative Study of Linear Regression, LSTM, and Random Forest ..... | 57 |
| <i>Regina Emia Stevania Barus, Salsabila Brilliant Putri, Inung Wijayanto, Muhammad Hablul Barri</i>                                                                |    |
| Enhancing Information Retrieval for Indonesian Medical Diagnoses Using BERT and Similarity Search .....                                                             | 63 |
| <i>Mutiara Auliya Khadija, Ery Permana Yudha, Wahyu Nurharjadmo, Mila Rosyida Uswatunnisa</i>                                                                       |    |
| Classification Comparative Analysis of Transformer, LSTM, and RNN for Detecting Fake Reviews on Tokopedia E-Commerce .....                                          | 69 |
| <i>Amelia Millati Azka, Dita Pramesti, Riska Yanu Fa'Rifah</i>                                                                                                      |    |
| AI Integration and User Beliefs in New Technology Adoption: The Role of Attitude Toward AI and Self-Efficacy .....                                                  | 75 |
| <i>Doni Purnama Alamsyah, Doni Morika, Bobby Siswanto, Norfaridatul Akmaliah Othman, Tri Rizki Prasetyo</i>                                                         |    |
| Design of an Intelligent Military Recruitment Support System Based on Certainty Factor and Forward Chaining Inference .....                                         | 81 |
| <i>Rosyid R. Al-Hakim, Ryan A. P. Putra, Agung Pangestu, Iman Widhiarto, Muhammad Yusro Yanuar Z. Arief</i>                                                         |    |

|                                                                                                                                                                    |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Optimizing Digital Marketing in Small Businesses with Machine Learning based Sentiment Analysis .....                                                              | 88  |
| <i>Hassan Rehan</i>                                                                                                                                                |     |
| Empowering Small Businesses with Digital Innovation by Leveraging IT Infrastructure, Data Analytics,<br>and AI for Sustained Growth .....                          | 94  |
| <i>Mohammad Abu Sufian, Niaz Morshed, Ishraf Rahman, Zenith Matin Guria, Sweety Rani Dhar</i>                                                                      |     |
| Advancing Global Peace through Inclusive Economic Development and the Role of Artificial<br>Intelligence in Bridging Socioeconomic Divides .....                   | 100 |
| <i>Zenith Matin Guria, Niaz Morshed, Ishraf Rahman, Sweety Rani Dhar, Mohammad Abu Sufian</i>                                                                      |     |
| Optimizing Few-Shot Learning for Indonesian Sign Language Video Recognition Using Batch Hard<br>Triplet Loss .....                                                 | 106 |
| <i>Ardo Damarjati, Ni Putu Intan Paramitha Marchila A. D, Riskya Putra Sembiring<br/>Alexander Agung Santoso Gunawan</i>                                           |     |
| Development of an Intelligent System for Evaluating Carbon Emissions of Asphalt Mixtures Using<br>Machine Learning Methods .....                                   | 113 |
| <i>I Gusti Agung Ananda Putra</i>                                                                                                                                  |     |
| Improved Mobile U-Net for Automatic Building Detection from High-Resolution Satellite Images .....                                                                 | 119 |
| <i>Muhammad Anang Fathur Rohman, Heri Prasetyo, Abid Ammar Mahdy</i>                                                                                               |     |
| AGV2U-Net: Enhancing U-Net with Attention and GhostV2 Modules for Accurate and Efficient<br>Segmentation .....                                                     | 125 |
| <i>Muhammad Anang Fathur Rohman, Heri Prasetyo</i>                                                                                                                 |     |
| MASH-UNeXt: A Lightweight Architecture with Multiscale and Large Kernel Concepts for Accurate<br>Breast Cancer Segmentation .....                                  | 131 |
| <i>Muhammad Anang Fathur Rohman, Heri Prasetyo</i>                                                                                                                 |     |
| Preemption Confirmation for Traffic Signal Control Using Visual Language Model with Moondream2<br>on YOLO-Based Inference : A Novel Post-inference Framework ..... | 137 |
| <i>Dwi Ahmad Dzulhijjah, Setiawardhana Setiawardhana, Bima Sena Bayu Dewantara</i>                                                                                 |     |
| Deep Learning-Based Quality Control for Surface Defect Detection in Particle Board Using CNN and<br>ResNet50 Toward Zero Defect Manufacturing .....                | 143 |
| <i>Yustina S Tjahjaningsih, Moses L. Singgih, Putu Dana Karningsih, Chastine Fatichah</i>                                                                          |     |
| Flow Rate and Frequency Control using Fuzzy Logic Controllers For African Night Crawler (ANC)<br>Harvesting .....                                                  | 149 |
| <i>Aris Triwiyatno, Sukiswo, Darjat, Danutrisno</i>                                                                                                                |     |
| Classification of Different Characteristics Agricultural Pests Based on Support Vector Machine<br>Optimized Chimpanzee Leader Election Optimization .....          | 155 |
| <i>Ferry Wahyu Wibowo, Robert Marco, Muhammad Koprari, Akhmad Dahlan, Wihayati Wihayati</i>                                                                        |     |
| Comparative Analysis of Naïve Bayes Algorithms for Lecturer Performance Classification .....                                                                       | 162 |
| <i>Ahmadiar Ahmadiar, Nissa Hasna Nabila, Ramzi Adriman, Agussabti Agussabti, Nasaruddin Nasaruddin</i>                                                            |     |
| The Effect of Artificial Intelligence and IT Governance on Audit Quality .....                                                                                     | 169 |
| <i>Anarangga Shambarana Arminawan, Joni Suhartono, Bambang Leo Handoko</i>                                                                                         |     |

|                                                                                                                                    |     |
|------------------------------------------------------------------------------------------------------------------------------------|-----|
| Segmentation of Student Stress Levels Using Gaussian Mixture Models .....                                                          | 175 |
| <i>Yudha Islami Sulistya, Maie Istighosah, Nisrina Hanifa Setiono, Laila Ramadhani Putri</i>                                       |     |
| <i>Ahmad Uffi Lestari Ma'ruf</i>                                                                                                   |     |
| TGRU-Net: Transformer Ghost Residual U-Net for Automatic Building Detection from<br>High-Resolution Satellite Images .....         | 181 |
| <i>Heri Prasetyo, Abrar Dwi Fairuz Nadhif, Muhammad Anang Fathur Rohman, Abid Ammar Mahdy</i>                                      |     |
| <i>Hafidh Muhammad Akbar, Chih-Hsien Hsia</i>                                                                                      |     |
| Batik Image Retrieval Using Siamese Networks and Locality Sensitive Hashing .....                                                  | 187 |
| <i>Heri Prasetyo, Alim Wicaksono Hari Prayuda, Chih-Hsien Hsia, Muhammad Anang Fathur Rohman</i>                                   |     |
| <i>Hafidh Muhammad Akbar, Andika Kavin Septiano</i>                                                                                |     |
| Automated Financial News Summarization from YouTube Videos using Speech Recognition and<br>Abstractive Models .....                | 193 |
| <i>Favian Harya Nandana Adrian, Ravael D. R Hardjodipuro, Narendra Nusantara Handradika</i>                                        |     |
| <i>Alexander Agung Santoso Gunawan</i>                                                                                             |     |
| Indonesian News Classification on Detik.com using LSTM-RNN, TF-IDF, and BERT Methods:<br>Comparative Analysis of Performance ..... | 199 |
| <i>Muh Hanafi, Agus Sriyanto</i>                                                                                                   |     |
| Analysis of 110 VDC Battery Capacity Test at Unit 3 PLTU Tarahan .....                                                             | 205 |
| <i>Sigit Doni Ramdan, Eko Rahmat Widani, Elka Pranita, Fajar Dewantoro</i>                                                         |     |
| Quantum Machine Learning with Cyber Security Algorithm and Data Security A Comparative Analysis<br>of SVM and QSVM .....           | 211 |
| <i>Muhammad Adnan, Enda Fallon, Amit Hirway</i>                                                                                    |     |