

2025 International Seminar on Application for Technology of Information and Communication (iSemantic 2025)

**Semarang, Indonesia
18-20 September 2025**

IEEE Catalog Number:
ISBN:

CFP25CUE-POD
979-8-3315-6592-3



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:	CFP25CUE-POD
ISBN (Print-On-Demand):	979-8-3315-6592-3
ISBN (Online):	979-8-3315-6591-6

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

Evaluation of Local Prediction Intervals with Locart, Loforrest, XGBoost, and Stacking Regression: An Empirical Study on Used Car Price Prediction	1
<i>Jarot Muchtar, Guruh Fajar Shidik</i>	
Evaluation of Machine Learning Models for Solar Energy Forecasting with DTBoost Improvement	6
<i>Feri Nur Hendi, Guruh Fajar Shidik</i>	
Hybrid Architecture of Deep Learning InceptionResNetV2 and Bidirectional LSTM for High Accuracy Plant Disease Detection	12
<i>Ananta Agil Nusantara, Guruh Fajar Shidik</i>	
Sarcasm Detection in Online Comments Using Optimized Transformer RoBERTa	18
<i>Riki Arofiq, Guruh Fajar Shidik</i>	
Improve CNN Architecture using Layer Normalization and Convolution Transpose Layers with Adagrad Optimization for Pest Detection	22
<i>M. Saipul Arifin, Guruh Fajar Shidik, Pulung Nurtantio Andono, Pujiono</i>	
Improvement Stock Price Forecasting with a Hybrid Long Short-Term Memory (LSTM) and Transformer Model	28
<i>Muh Akhirudin Fajar Santoso, Guruh Fajar Shidik, Abdul Syukur, Farrikh Alzami</i>	
Proximal Policy Optimization in Turn-based Strategy Game MECH.AI	34
<i>Hanif Fahmi, Umi Rosyidah, Ardiawan Bagus Harisa, Hanny Haryanto</i>	
Deep Learning using DeiT Transformer and Simple ResNet-16 Architecture for Tuberculosis Classification	42
<i>Devita Nurul Aini, Guruh Fajar Shidik, Purwanto</i>	
ARSAGON: An Integrated Approach Combining Symmetric, Asymmetric, and Hashing Algorithms for Multi-Factor Authentication (MFA)	49
<i>Mursalim, Yulaikha Maratullatifah, Nevin Shera Adji</i>	
Implementation Of Causal Decision Diagrams Using Impactflow: A Case Study On Profit Optimization and Inventory Control	55
<i>Richie Muljana, Alexander Agung Santoso Gunawan</i>	
Cattle Farm Monitoring Smart System LoRaWAN-based	61
<i>Amri, Ramzi Adriman, Puput Dani Prasetyo Adi, Yuwaldi Away, Husni Husin, Nasrullah Armi, Syahril Afdhal</i>	
Fatigue Analysis and Line Balancing Optimization for Sewing Maximize Standart Time and Increase Manufacturing Process	67
<i>Ratih Setyaningrum, Amelia Dewi Cahyaningtyas, Sukmawati Kurnia Dewi, Divania Thifal Achsan, Sahana Pramukti</i>	
Analyzing Global Finance News Using BERTopic Topic Modeling and FinBERT Sentiment Analysis	73
<i>Hendry Setiawan, Jason Pangestu, Alexander Agung Santoso Gunawan, Jeffrey Junior Tedjasulaksana</i>	
Enhancing OFDM System Performance over Correlated Double Ring Channel	80
<i>Dona Fatmawati, Wahyu Pamungkas, Anggun Fitriani Isnawati</i>	

Analyzing the Impact of Transpose Layers on CNN-Based Deep Learning	88
<i>Sie Deta Dirganjaya, Guruh Fajar Shidik, Maulidya Ayu Ardiena, Radhitya Marendratama</i>	
<i>Edi Jaya Kusuma</i>	
Machine Learning-Based Adaptive Budgeting Model: Integrating IHSG Forecasting into Marketing Expenditure Decisions	94
<i>Rony Arpinto Ady, V.D.W. Aryanto, Diana Aqmala</i>	
LSTM Performance Improvement Using Hybrid Activation Function to Improve AQI Prediction Accuracy in Semarang Industrial Area	100
<i>Ivan Muhammad Reza, Pulung Nurtantio Andono, Pujiono, Guruh Fajar Shidik</i>	
Unsupervised Masking of Sedimentary Pores using K-Means and Fuzzy C-Means Clustering	105
<i>Lubna Mawaddah, Rizky Syah Gumelar, Muhammad Reesa Rosyid, Muhamad Akrom, Supriadi Rustad</i>	
<i>Totok Sutojo</i>	
Enhancing Static ASL Gesture Recognition with SE-Integrated VGGNet and Bayesian Optimization	114
<i>Filipus Arif Kristiyan, Guruh Fajar Shidik, Yudha Rizqia Grafer, Chandra Lukita Buana, Edi Jaya Kusuma</i>	
Optimizing BiLSTM with Particle Swarm Optimization and Context-Aware Features for Movie Review Sentiment Classification	120
<i>Yudha Rizqia Grafer, Guruh Fajar Shidik, Bambang Putra Amsal Gautama, Filipus Arif Kristiyan</i>	
<i>Chandra Lukita Buana, Edi Jaya Kusuma</i>	
Comparative Analysis of CNN and Fine-Tuned InceptionV3 With and Without Transposition Layer for Chest X-ray Image Pneumonia Detection	127
<i>Erna Amalia Widhiyanti, Guruh Fajar Shidik, Aisyah Nuraini, Talitha Olga Ramadhani, Edi Jaya Kusuma</i>	
Performance Evaluation of SHAP and LIME for Cardiovascular Disease Prediction Using an XAI Framework	133
<i>Aisyah Nuraini, Guruh Fajar Shidik, Erna Amalia Widhiyanti, Talitha Olga Ramadhani, Edi Jaya Kusuma</i>	
Deep Learning Approaches for Medical Data: Early-Stage Diabetes Detection with Class Imbalance Handling Techniques	139
<i>Talitha Olga Ramadhani, Guruh Fajar Shidik, Adelfia Milka Novtagravina, Aisyah Nuraini</i>	
<i>Erna Amalia Widhiyanti, Edi Jaya Kusum</i>	
YOLOv8n for Home Flower Health Detection: A Computer Vision Approach for Indoor Flower Monitoring	145
<i>Imelda Mareta Putri, Moch. Sjamsul Hidajat, Dibyo Adi Wibowo, Ichwan Setiarso, Didik Hermanto</i>	
<i>Tri Esti Rahayuningtyas, Choerul Umam, Eko Hari Rachmawanto, Noorayisahbe Mohd Yaacob</i>	
Comparison of YOLO and RF-DETR Performance in Detecting Personal Protective Equipment in Construction Environments Using Tokenization	151
<i>Chandra Lukita Buana, Guruh Fajar Shidik, Muhammad Naufal Ubaidillah, Yudha Rizqia Grafer</i>	
<i>Filipus Arif Kristiyan, Edi Jaya Kusuma</i>	
Model-Free Hybrid Position and Impedance Control for Upper Limb Rehabilitation Robot	158
<i>Mawloud Aichaoui, Ameer Ikhlef</i>	
DUA-YOLOv8 for Autonomous Vehicles: Traffic Light Detection with DUANet and SPPCSPC Modules	164
<i>Eko Hari Rachmawnto, Ahmed Moayed, Ali Dahir Alramadan, Murtadha A. Alazzawi</i>	
<i>Mohammed Mansoor Nafea, Omar I. Dallal Bashi, Bonifacius Vicky Indriyono, Heru Pramono Hadi</i>	
<i>Rabei Raad Ali</i>	

A Convolutional Network-based Comparative Analysis of DenseNet201, VGG16, and MobileNetV2 for Mushroom Classification	170
<i>Muhammad Khanif Naufal, Christy Atika Sari, Eko Hari Rachmawanto, Abdussalam, Chaerul Umam L. Budi Handoko, Agus Triyono, Candra Irawan, Folasade Olubusola Isinkaye</i>	
Quantum Marketing: A Conceptual Implementation in Central Java's Small and Medium Enterprises	176
<i>Vincent Didiek Wiet Aryanto, Entot Suhartono</i>	
Impact of Label Variations on Machine Learning Performance in Student Dropout Prediction Using Public and Private Datasets	182
<i>Abdul Rohman, Nova Rijati, Pujiono, Ahmad Zainul Fanani</i>	
Transformer-Based Models for Public Policy Sentiment Analysis: Social Media Reactions to Government Programs	189
<i>M Afif Nuruddin, Nurul Anisa Sri Winarsih, Cinantya Paramita, Anamarija Jurcev Savicevic</i>	
The Automation of Appetite: Barriers and Enablers of Artificial Intelligence Driven Home Cooking Machines Among Urban Households	198
<i>Tanuj Mathur, Shiladitya Verma, Jitendra Sharma, Sujoy Sen</i>	
Q-Learning-Based Detection of IPv6 Intrusions: A Behavioral and Performance Study	203
<i>April Firman Daru, Alauddin Maulana Hirzan, Zainab Senan Mahmud Attar Bashi, Fajriannoor Fanani</i>	
Machine Learning-Driven ROI Prediction Framework for Micro and Macro Influencer Marketing in Indonesian Food SMEs	210
<i>Sabar Aritonang Rajagukguk</i>	
Combining YCbCr and HSV Color Features for Neonatal Jaundice Classification Using XGBoost	217
<i>Moh. Fathul Qorib, Abdul Syukur, Catur Supriyanto, Moch Arief Soeleman, Adi Wijaya</i>	
Small Models Big Challenges Comparing Abstract and Long Context Analogy Accuracy in Distilled and ~4B Parameter Language Models	223
<i>Dionisius Hendi Krisnanto, Frederick Chandra, Axel Kurniawan, Alexander Agung Santoso Gunawan</i>	
A Comparative Evaluation of Automatic Transcription Systems: Indonesian and American Accented English Using Wav2Vec2ForCTC and Turboscribe	230
<i>Celina Salsa Sadilla, Jeanette Hauw Chandra, Alexander Agung Santoso Gunawan, Rilo Chandra Pradana</i>	
Deep Learning Model for Posture-based Height Estimation of Toddlers on Monocular Images	236
<i>Erik Prakoso, Abdul Syukur, Affandy Affandy</i>	
Feature Extraction Methods for Rescue Requests from Social Media during Natural Disasters	242
<i>Ade Sutedi, Supriadi Rustad, Guruh Fajar Shidik, Heru Agus Santoso, Muljono</i>	
Optimization of MobilenetV2 Using PSO for Lightweight and High-Accuracy Tomato Quality Classification	248
<i>Kukuh Imam Eka Wahyu Wibowo, Guruh Fajar Shidik, Purwanto Purwanto</i>	
Machine Learning Algorithms for Chick Egg Sex Classification Using Morphological Features	253
<i>M. Ali Hanafiah, Edi Noersasongko, Heru Agus Santoso, Ahmad Zainul Fanani</i>	
Attention-Enhanced CNN-BiLSTM for Bone Mineral Density Estimation from Electrochemical Impedance Spectra	260
<i>Sari Ayu Wulandari, Eunike Laurensya Agata, Nimas Maharani C.E, Nabil Alriski, Mirza Tsabita Wafa'Ana Aripin Aripin</i>	

Optimization of Multi-Disease Classification in Rice Leaves Using CNN with Locality Sensitive Hashing and Chebyshev Distance	267
<i>Panji Novantara, Pulung Nurtantio Andono, Guruh Fajar Shidik, Affandy</i>	
User Experience Analysis of a Mobile Augmented Reality Campus Visualization Using User Experience Questionnaire (UEQ) Approach	275
<i>Budi Arifitama, Ade Syahputra</i>	
Optimizing Distribution Network Efficiency: Integrating DEA and TOPSIS Framework	281
<i>Dony Saputra, Gerarda Muljadi, Hendri Hartono</i>	
Deep Learning for Enhanced DDoS Detection in Software-Defined Networks: A Review	286
<i>Abdinasir Hirsi, Abdirahman Hassan Mohamud, Mohamed Ahmed, Mohamed Jama, Lukman Audah Abdirizak Abdullahi Khalif, Abubakar Abdi Warsame, Jafar Ismail Mohamed, Hafso Mohamed Mohamoud Mohamed Elmi Ahmed, Mohamed Osman Omar, Salman Ahmed</i>	
Random Forest Enhancement using Sequential Feature Selection for Machine Maintenance Prediction	292
<i>Muljono Muljono, Muhammad Irfan Arisani, Ermanu Azizul Hakim</i>	
Performance Improvement of the Faster R-CNN Model Using ResNet Architecture and Data Augmentation for Indonesian Sign Language (BISINDO) Detection	298
<i>Devi Ayu Rachmawati, Catur Supriyanto, Mochammad Arief Soeleman, Novi Hendriyanto</i>	
Reinforcement Learning-Based Adaptive Control for Variable-Speed Wind Turbines Under Uncertain Wind Profiles	305
<i>Laid Sehili, Ouarda Hamaidi</i>	
Behaviour Tree-Based Non-Playable Character Behavior in Javanese Script Educational Game	311
<i>Hanifan Fadhillah Wibowo, Hanny Haryanto</i>	
Enhancing False Alarm Reduction in Network Traffic Anomaly Detection Using Ensemble Machine Learning	317
<i>Elkaf Rahmawan Pramudya, Edi Nur Sasongko, Affandy Affandy, Fikri Budiman</i>	
Predicting Short-Term Hotel Bookings with an Ablation-Refined XGBoost Model	323
<i>Lutfi Azis Hafiizhudin, Adhitya Nugraha, Ardytha Luthfiarta, Fahri Firdausillah Ainur Rahma Miftakhul Rizqi, Dzawil Uqul</i>	
Multi-Strategy Feature Selection for Glioma Grading Using Classical and Deep Models	330
<i>Ainur Rahma Miftakhul Rizqi, Adhitya Nugraha, Ardytha Luthfiarta, Ika Novita Dewi, Lutfi Azis Hafiizhudin Adelfia Milka Novtagravina</i>	
A Robust Benchmark of Modern and Foundational CNN Architectures for Multi-Label Retinal Disease Classification	338
<i>Ulima Muna Syarifah, Adhitya Nugraha, Ardytha Luthfiarta, Ika Novita Dewi, Najma Amira Mumtaz Maulatus Shaffira Fitri</i>	
A Hybrid CBAM-Vision Transformer for Enhanced Classification of Retinal Diseases in Optical Coherence Tomography Imagery	345
<i>Najma Amira Mumtaz, Ardytha Luthfiarta, Adhitya Nugraha, Ika Novita Dewi, Ulima Muna Syarifah Dzawil Uqul</i>	

Performance Comparison of YOLOv8 and YOLOv11 Enhanced by Grey Wolf Optimizer for Motorcycle Helmet Detection in Traffic Surveillance	351
<i>Muhammad Naufal Ubaidillah, Adhitya Nugraha, Ardytha Luthfiarta, Erwin Yudi Hidayat</i>	
<i>Chandra Lukita Buana, Radhitya Marendratama</i>	
Enhancing Speech Emotion Recognition with CNN and Selective Interpolation SMOTE in an Integrated Pipeline: A Multi-Dataset Evaluation	357
<i>Maulatus Shaffira Fitri, Ardytha Luthfiarta, Adhitya Nugraha, Fahri Firdausillah, Leonardo Adhi Saputra</i>	
<i>Ulima Muna Syarifah</i>	
Enhancing Skin Cancer Classification Performance Using SMOTE-RENN: A Hybrid Resampling Approach	364
<i>Novia Wahyu Wulansari, Moch Arief Soeleman, Catur Supriyanto, Muslih</i>	
Evaluating the Robustness of VITS for Indonesian Text-to-Speech under Severe Data Scarcity	370
<i>Leonardo Adhi Saputra, Ardytha Luthfiarta, Adhitya Nugraha, Fahri Firdausillah, Yudha Rizqia Grafer</i>	
<i>Maulatus Shaffira Fitri</i>	
Edge-AI Based Rat Monitoring in Food Warehouse using YOLOv11 and Raspberry Pi	376
<i>M. Irwan, Khairun Saddami, Rizka Ramadhana, Ramzi Adriman</i>	
Advancing Automated Nematode Classification: A ConvNeXtV2-Based Approach for High-Accuracy Genus Identification	382
<i>Dzawil Uqul, Adhitya Nugraha, Ardytha Luthfiarta, Ika Novita Dewi, Lutfi Azis Hafiizhudin</i>	
<i>Najma Amira Mumtaz</i>	
Rainfall Prediction Using Hybrid Model DWT-NARX-LSTM Based on Correlative Feature Selection	388
<i>Giyarto, Muljono, Heru Agus Santoso</i>	
Comparative Analysis of YOLO-Based and Hybrid Detection Pipelines for Safety Helmet Monitoring on Construction Sites	395
<i>Radhitya Marendratama, Adhitya Nugraha, Ardytha Luthfiarta, Erwin Yudi Hidayat, Filipus Arif Kristiyan</i>	
<i>Muhammad Naufal Ubaidillah</i>	
A Comparative Study of YOLOv7 and YOLOv8 for Identification of Dental Caries on Intraoral RGB Images	402
<i>Saiful Ulya, Muljono, Heru Agus Santoso, Ruri Suko Basuki, Liftia Layyinatus Syifa</i>	
A Post-Processing Verifier-Reranker Architecture for Efficient Hallucination Reduction in Generative Question Answering	410
<i>Jessie Natalie Wibowo, Guruh Fajar Shidik, Amalia Putri Dwi Mareta, Edi Jaya Kusuma</i>	
IndoBERT for Multi-Class Sentiment Classification of Student Aspirations: The Role of Stopword Removal and Stemming	417
<i>Adelfia Milka Novtagravina, Ardytha Luthfiarta, Adhitya Nugraha, Defri Kurniawan</i>	
<i>Ainur Rahma Miftakhul Rizqi, Talitha Olga Ramadhani</i>	
Impact of the Integration of Local Binary Patterns Feature Extraction Methodologies on the Convolutional Neural Network Framework in the Detection of Pollutant Debris in Aquatic Environments	423
<i>Heny Indriani, Pulung Nurtantio Andono, Heru Agus Santoso, Affandy, Kurdianto</i>	
AJISAI: Augmented Joint Information Self Supervision with Aligned Inputs	430
<i>Bayu Dewanto, Ardytha Luthfiarta, Adhitya Nugraha, Fahri Firdausillah, Maulatus Shaffira Fitri</i>	
<i>Radhitya Marendratama</i>	

CNN-Based Emotion Detection for Road Users Using Detectron2 and YOLOv11 Architectures	436
<i>Armaidi Armaidi, Maulisa Oktiana, Khairun Saddami, Roslidar Roslidar, Yunida Yunida Abdullah Fatih Farhat</i>	
Aspect-Based Sentiment Analysis in Indonesian Hotel Reviews: Machine Learning versus Large Language Models	444
<i>Marchel Christoper Wuisang, Gusti Pangestu</i>	
Multiperspective Geo-AI for Optimizing Public Transportation in West Jakarta	450
<i>Christian Daniel Wiranata, Juandito Sugiyanto, Nicander Jevon Delano, Said Achmad</i>	
Optimizing Sentiment Prediction for TripAdvisor Hotel Reviews Using Machine Learning and Deep Learning Approach	456
<i>Vincent Kholvin, Givann Ong, Said Achmad</i>	
Performance Comparison Analysis of Aspect-Based Sentiment Analysis (ABSA) in Deep Learning and Machine Learning on Indonesia's Tourism Destinations on Google Maps	462
<i>Alexander Dharmawan, Aris Marjuni, Sri Winarno, Affandy</i>	
A Policy-Aware Framework for Data Masking: Secure Integration of Applications and Artificial Intelligence in Healthcare and Financial Services	468
<i>Harikrishnan Muthukrishnan, Jabin Geevarghese George, Arpna Aggarwal</i>	
Gradient Boosting and Chi-Square for Advanced Ransomware Detection	474
<i>Fauzi Adi Rafrastara, Pulung Nurtantio Andono, Purwanto Purwanto, Pujiono Pujiono, Warusia Yassin</i>	
The Utilization of Machine Learning for Cheating Detection in FPS Games	481
<i>Stebby Andre, Alvin Tandiarrang Sumual, Said Achmad, Rhio Sutoyo</i>	
Data-Driven Urban Traffic Injury Profiling Using Machine Learning and Spatiotemporal Analytics in Muntinlupa City, Philippines	487
<i>Mc Joben R. Reyes, Cristoper N. Rabino</i>	
Improving Customer Churn Prediction Using Domain-Driven Feature Engineering, Resampling, and CatBoost with Explainability Extensions	493
<i>Muhammad Jamaludin Nur, De Rosal Ignatius Moses Setiadi, Arnold Adimabua Ojugo, Minh T. Nguyen</i>	
Active Disturbance Rejection Control for Ground Vehicle Cruise Systems Under Uncertainty	500
<i>Laid Sehili, Mohamed Cherif Rais</i>	
Guiding Self-Regulated Learning with an LLM-Based Pedagogical Chatbot	505
<i>Fariza Eka Aulia, Indriana Hidayah, Silmi Fauziati, Shafira Anissa</i>	
Sparrow: a Feistel Lightweight Block Cipher Based on Enhanced Logistic Map	512
<i>I Ketut Yudi Sucipta, Bety Hayat Susanti</i>	
Affordable and Scalable IoT Sensor Nodes for Sustainable Smart Farming	519
<i>Md Shahriar Kabir, Khokan Kumer Sarker, Khalid Mahmud Niloy, Md. Ismail Hossain Mofazzol M.G. Mostofa Amin, Chaity Sarker</i>	
Plankton Types Classification in Image Using Transformer-Based Model Approaches	527
<i>Muhammad Zaki Nur Rahman, Gamma Kosala</i>	

Client-Based Learning and Zero-Knowledge Proof Implementation in Social Media Recommendation Systems	533
<i>Kenneth Johannes Fang, Bryan Archie, Anderies Anderies, Andry Chowanda</i>	
Improvement Of Melanoma Classification using MobileNet with Augmentation and AdamW Optimization	541
<i>Zulfikar Amri Ardiansyah, Guruh Fajar Shidik, M. Arief Soeleman</i>	
Comparative Performance of YOLOv10, YOLOv11, and YOLOv12 Models for Helmet Violation Detection in Motorcycle Riders	547
<i>Miftahur Rizki, Gamma Kosala</i>	
Acne Detection and Facial Skin Severity Classification into Four Categories Using You Only Look Once (YOLO) V11	554
<i>Nadya Khairani, Gamma Kosala</i>	
Predicting and Explaining Programmatic Ad Revenue using Interpretable Boosting	561
<i>Muchammad Resya Firmansyah, Vincent Didiek Wiet Aryanto, Artha Febriana</i>	
Cracking CP256-1299: A Digital Signature on Cubic Pell Cryptosystem	569
<i>Dandi Agus Ferdianto, Bety Hayat Susanti, Nadia Paramita Retno Adiati</i>	
Neural Approaches for Indonesian–Javanese Translation: A Comparison of RNN and Transformer Models	575
<i>Tri Listyorini, Muljono, Purwanto, Ruri Suko Basuki</i>	