2025 5th Asia Conference on **Information Engineering** (ACIE 2025)

Phuket, Thailand 10-12 January 2025



IEEE Catalog Number: CFP25Z82-POD ISBN:

979-8-3315-2841-6

Copyright © 2025 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:
 CFP25Z82-POD

 ISBN (Print-On-Demand):
 979-8-3315-2841-6

 ISBN (Online):
 979-8-3315-2840-9

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



2025 5th Asia Conference on Information Engineering (ACIE)

ACIE 2025

Table of Contents

Preface x Program Committee xi
Software Design and Data Management Systems
A Process Model for Academic Student Support Services – a Croatian Case 1 Sanja Candrlic (University of Rijeka, Croatia), Sandra Nuzdic (University of Rijeka, Croatia), and Martina Asenbrener Katic (University of Rijeka, Croatia)
Study on Influencing Factors of Self-Regulated Learning — Python Programming as an Example 9 Yongling Jiang (Ocean University of China, China), Huanhuan Wu (Ocean University of China, China), Xinlin Li (Ocean University of China, China), Xiaodan Yu (Ocean University of China, China), and Yueyue Wang (Ocean University of China, China)
API-Based Personal Healthcare Application: Securing Data and Ensuring Patient Privacy
Blockchain-Driven Research in Personality-Based Distributed Pair Programming
Advanced Simulation Control and Real-Time Monitoring for CARLA: Agile Development of a Web-Based Interface

Database Schema Matching Model Based on Multimodal Fusion Analysis Yansheng Qu (State Grid Shandong Electric Power Company Information and Telecommunication Company, China), Chao Ma (State Grid Shandong Electric Power Company Information and Telecommunication Company, China), Yingxian Chang (State Grid Shandong Electric Power Company Information and Telecommunication Company, China), Fading Pan (State Grid Shandong Electric Power Company Information and Telecommunication Company, China), Linlin Tang (State Grid Shandong Electric Power Company Information and Telecommunication Company, China), and Shaosong Zhu (State Grid Shandong Electric Power Company Information and Telecommunication Company, China)	32
Machine Learning Models and Intelligent Computing	
Enhancing CO2 Sequestration Modeling in Mangrove Forests Through Random Forest Hyperparameter Optimization and Remote Sensing Band Analysis	37
An Improved Gorilla Troops Algorithm for Real-World Engineering Problems	44
From Data to Diagnosis: Applying Machine Learning Model for Reliable Heart Disease Prediction Ananna Rashid Kumkum (American International University-Bangladesh, Bangladesh), Anik Sen (American International University-Bangladesh, Bangladesh), Abdullah Yousuf Noman (American International University-Bangladesh, Bangladesh), Prajukta Majumder (American International University-Bangladesh, Bangladesh), Tze Hui Liew (Multimedia University, Malaysia), Nafiz Fahad (Multimedia University, Malaysia), Md. Saef Ullah Miah (Multimedia University, Malaysia), Riadul Islam Rabbi (Multimedia University, Malaysia), and Md. Jakir Hossen (Multimedia University, Malaysia)	50
Employing Machine Learning for Flood Prediction: A Comparative Study of Tree-Based Techniques	57
ForestRank: Automatic Keyphrase Extraction Leveraging Random Forest Classifier and Multi-Criteria Decision-Making	62
Stock Price Forecasting in Finance with Artificial Neural Networks	68

Digital Image Detection and Classification Technology Transfer Learning Approach for Robust Motion Detection with EBM

Dung Ngoc Le Ha (Can Tho University, Can Tho University of Technology, Vietnam), Nghia Duong-Trung (IU International University of Applied Sciences, Germany), and Hiep Xuan Huynh (Can Tho University, Vietnam)	74
Attention-Based Color Spatial Relationship Matrix for Optimizing Deep Learning Performance in Histopathology Image Grayscale Conversion	80
Method for Detecting Unknown Floating Objects in Maritime Environment using Efficient GAN Hiromu Habuka (Tokyo University of Marine Science and Technology, Japan) and Kohta Ohshima (Tokyo University of Marine Science and Technology, Japan)	86
Skin Lesion Classification with EBMs Based on Energy Correlation Approach	93
Artificial Intelligence Theory and Engineering Applications	
Function-Based RAG for Vietnamese Speech Comprehension in Service Robotics Ngo-Ho Anh-Khoi (Nam Can Tho University, Vietnam), Vo Khuong-Duy (Adhightech Ltd., Vietnam), and Ngo-Ho Anh-Khoa (Quantmetry, France)	. 100
Enhancing Enterprise Sentiment Analysis with Word2Vec-Bi-GRU-Attention Method	. 105
and Technology, China)	
	. 111
and Technology, China) ESS-PoI: Energy-Driven Semantic Segmentation with Points of Interest	
and Technology, China) ESS-PoI: Energy-Driven Semantic Segmentation with Points of Interest Toan Phung Huynh (Can Tho University, Viet Nam) and Hiep Xuan Huynh (Can Tho University, Viet Nam)	. 111 . 117
and Technology, China) ESS-PoI: Energy-Driven Semantic Segmentation with Points of Interest	

Can Official Data be Trusted? Clarifying Biases in Sentiment Analysis	. 129
Artificial Intelligence and Multimedia Applications in Digital Education	
Examining University Faculty's Acceptance of ChatGPT through the Technology Acceptance Model	. 136
Technological Acceptation Model for Processes Improvement: An Innovative Educational Experience using Virtual Reality	. 142
AI-Based Medical Education Through Computer-Interpretable Clinical Guidelines: Project and First Advances Antonella Andolina (ITCS Sommeiller, Italy), Luca Arborio (University of Eastern Piedmont, Italy), Alessio Bottrighi (University of Eastern Piedmont, Italy), Antonio Maconi (Azienda Ospedaliera "SS Antonio e Biagio e C. Arrigo", Italy), Stefano Nera (University of Eastern Piedmont, Italy), Luca Piovesan (University of Eastern Piedmont, Italy), Erica Raina (University of Eastern Piedmont, Italy), and Paolo Terenziani (University of Eastern Piedmont, Italy)	. 148
Exploration and Practice of Deep Learning Classroom Teaching of "Computer Network" Course Based on the Integration of Specialization and Innovation	154
Energy-Based Video Captioning with Distance Learning	. 159
System Design and Development of a Personnel Training Platform Based on Distributed Storage Technology	. 165
System Analysis and Security Testing in Communication and Information Systems	
Design of Network Environment Advertisable Multipath Transmission Control System for Mobile Device Support	.171
Cluster Free Downlink MISO NOMA System: DRL Approach	. 177

Real-Time Two-Stage Detection and Mitigation System for DDoS Attacks in SDN	. 183
Jumpei Sato (Tokyo University of Marine Science and Technology,	
Japan), Kohta Ohshima (Tokyo University of Marine Science and	
Technology, Japan), and Naoya Kitagawa (National Institute of	
Informatics, Japan)	
Author Index	191