

2025 International Conference on Fuzzy Theory and Its Applications (iFUZZY 2025)

**Hsinchu, Taiwan
5-8 November 2025**

IEEE Catalog Number:
ISBN:

CFP2522T-POD
978-1-6654-5793-4



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:	CFP2522T-POD
ISBN (Print-On-Demand):	978-1-6654-5793-4
ISBN (Online):	978-1-6654-5792-7

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

Performance Improvement of Intrusion Detection Using Hyperparameter Optimization	1
<i>Shih-Cheng Horng, Hong-Yu Huang</i>	
Adaptive Fuzzy Prescribed-Time Tracking Control for Underactuated Surface Vessels	7
<i>Dehao Kong, Song Gao, Bingbing Sun</i>	
Effect of Learning Guidance Method Using Foot-in-the-Door Technique in Educational-Support Robots*	14
<i>Hiroki Kaede, Taro Kono, Felix Jimenez, Mamoru Onuki, Tomoki Miyamoto</i>	
Pareto Optimal Dehazing Approach for Photographic Image	20
<i>Shih-Cheng Horng, Hong-Yu Huang</i>	
Optimal Fuzzy Adaptive Control for a Class of Heterodimensional Second-Order Multi-Agent Systems	26
<i>Yongqing Fan, Chen He, Liang Luo</i>	
Spade Possibilistic Mean-Based Hexagonal Fuzzy MCDM Technique for Solid Waste Management Problem	34
<i>Totan Garai</i>	
Evaluation of the Impact of a Network System Utilizing Educational Support Robots and Delay on Learning Experiences	41
<i>Shogo Maki, Felix Jimenez</i>	
RB-CIR: Cross Attention Based Relation Binding for Composed Image Retrieval	47
<i>Hye-Rim Ju, Wang-Su Jeon, Sang-Yong Rhee, Mi-Sook Jung</i>	
Evaluating Individuals and Pairs for Sustaining Dyadic Collaboration	53
<i>Tomoe Entani, Honoka Koike</i>	
Fuzzy Ellipsoidal Clustering Incorporating Compactness and Separation of Clusters	59
<i>Daichi Machida, Katsuhiro Honda, Seiki Ubukata, Akira Notsu</i>	
Noise Rejection in MMMs-Induced Three-Mode Fuzzy Co-Clustering	64
<i>Haruto Miwa, Katsuhiro Honda, Seiki Ubukata, Akira Notsu</i>	
Cross-Subject sEMG-Based Deep Learning Model for Assistive Force Determination in Pneumatic Exoskeletons	69
<i>Song-Yu Wu, Po-Lei Lee</i>	
Privacy-Preserving Fall Detection Using Ensemble Learning on mmWave Radar Signals	75
<i>Jyun-Guo Wang, Che-Yuan Hsu, Hsin-Chieh Li, Chia-Yi Chuang</i>	
A Fuzzy Logic-Based Local Path Correction System for Autonomous Mobile Robots	79
<i>Cheng-Yu Hsiao, Hsien-Ting Chang</i>	
Interval Type-2 Fuzzy Covariance Control for Ship Fin Stabilizer Systems Under Stochastic Disturbances	85
<i>Yann-Horng Lin, Wen-Jer Chang, Cheung-Chieh Ku</i>	

Fuzzy Logic-Based Smoothing Control for Grid-Connected PV Systems with Lithium-Ion Battery Storage	91
<i>Cong-Sheng Huang, Kai-Li Wang</i>	
Real-Time Gun Detection Based on BRA-YOLOv8	97
<i>Qi-Yuan Zheng, Shun-Pin Hsu</i>	
Multiobjective Evolutionary Optimization of the Integrated Airline Routing and Rostering Problems Under Disruptive Conditions	103
<i>Chiu-Hung Chen, Fu-I Chou, Jun-Ren Guo, Qi-Yan Li, Guan-Ming Lai</i>	
Masked Advantage-Weighted Consistency Training in Online Reinforcement Learning	108
<i>Feng Zhang, Hak-Keung Lam, Shun-Hung Tsai, Ting-Yu Ho</i>	
A Dual-Stage EEG Classification Framework Using Spectral and Connectivity Features for Mild Cognitive Impairment	114
<i>Chieh-Ming Yang, Wei-Zheng Chen, Yun-Chieh Huang, Jung-Lung Hsu, Chin-Teng Lin, Kuan-Chih Huang, Li-Chun Wang</i>	
Stroke Data Analysis Integrating Fuzzy Association Rules and Permutation Tests	119
<i>Ting-Yan Lin, Meng-Feng Tsai, Szu-Chi Hou, Chi-Sheng Huang</i>	
Integration of Solar Energy System and Mobile Power Rental Station	125
<i>Meng-Yun Chung, Cheng-Chuan Chen, Xin-Ning Zhang, Heng-Jui Chuang, Pao-Hsuan Weng, Si-Xian Li</i>	
Lightweight Channel Reduction Method for Home-Base Sleep Monitoring	131
<i>Bo-Zhi Hsu, Shang-Shiuan Wu, Tien-Yu Chen, Tsung-Hao Hsieh</i>	
Wasserstein GAN with Gradient Penalty for Multi-Channel Physiological Signal Reconstruction in Sleep Monitoring	137
<i>Tzu-Hao Chung, Xiang-Yu Yang, Tsung-Hao Hsieh</i>	
Study on Decentralized Federated Learning Under Data Integration Mechanism Exploration	143
<i>Cheng-Hua Yu, Jin-Tsong Jeng</i>	
The Intelligent Power Nap System for Restoring Behavioral Capabilities in Sleepy Drivers	147
<i>Shao-Yang Cheng, Xun-Meie Kuo, Chih Hsiang Tsai, Shih-Wei Chang, Tsung-Hao Hsieh, Yu-Kai Wang, Sheng-Fu Liang</i>	
Meta-Learning for BCI: A Promising New Direction	152
<i>Connor Barkley, Riya Jain, Sheng-Fu Liang, Yu-Kai Wang</i>	
Fuzzy Gated Convolutional Neural Network for Severity-Adaptive Dysarthric Speech Conversion	157
<i>Chiun-Li Chin, Jun-Ren Chen, Wan-Xuan Lin, Rong-Sheng Chen, Hong-Ru Chen, Jin-You Hong, Hsuan-Chiao Hung, Shang-En Chiang, Chih-Hui Wang</i>	
Fuzzy Gated CNN-Based Speech Conversion and Generative AI Long Text Summarization Technology for a Telephone Subtitle Assistance System	163
<i>Cheng-En Li, Chiun-Li Chin, Yi-Wei Chen, Wei-Chieh Yu, Jhih-Cian Lin, Tzu-Hong Yang, Fu-Cheng Tsai, Yu-Li Chou</i>	
Mitigating Age-Dependent Bias in Parkinson's Disease Classification Using a Stacked Ensemble Architecture	169
<i>Ying-Chang Wu, Yu-Chen Kuo, Sheng-Fu Liang</i>	

UAV Autonomous Target Localization by Using Image-Based Visual Servoing	175
<i>Chong-Kai Wu, Wan-Chen Hu, Guei-Sin Ma, Cheng-Ta Chuang</i>	
AI-Powered Accessible 3D Tactile Graphics Generation System with Voice Interaction	181
<i>Bor-Jiunn Hwang, Yi-Wen Wu, Chiao-Wen Kao, Hui-Hui Chen</i>	
Integrating Fuzzy Evaluation Agents and LLM-Based Robots for Multilingual Interactive Applications	186
<i>Chang-Shing Lee, Mei-Hui Wang, Chao-Cyuan Yue, Chun-Han Lin, Sheng-Chi Yang, Yi-Jun Lin</i>	
<i>Naoyuki Kubota, Eri Sato-Shimokawara</i>	
Hybrid Knowledge Distillation for Generalizable Lightweight Models in Medical Image Recognition	192
<i>Yu-Ting Lai, Cheng-Yan Huang, Tsung-Hsuan Lee, Ting-Yu Lin, Nai-Zhen Lin, Chiao-Wen Kao</i>	
Adaptive EEG Artifact Space Reconstruction Based on the Support Vector Estimation in Dynamic Motion Conditions	197
<i>Shao-Ying Lee, Po-Han Lin, Chih-Wei Lu, Congying He, Li-Wei Ko</i>	
Mutation-Based Survival Prediction in Hepatocellular Carcinoma: A Genomic Alternative Matching Transcriptomic Approaches	203
<i>Yen-Jung Chiu, Che-Wei Liu, Yu-Jie Lin, Yen-Hua Huang</i>	