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WELCOME NOTES FROM THE GENERAL CHAIRS

We are pleased to welcome you to The International Conference on System Science and Engineering 2026 (ICSSE 2026) in Aomori, Japan. Jointly organized by the Taiwan Association of Systems Science and Engineering (TASSE), National Ilan University, and National Taiwan University of Science and Technology, ICSSE 2026 serves as a premier forum for researchers and practitioners to discuss the latest advances in system science and engineering. We hope this conference inspires you to exchange ideas, share experiences, and foster new collaborations.

We are proud to present a robust technical program featuring 130 papers and four distinguished keynote speeches by world-class experts. We express our heartfelt gratitude to all authors who submitted their work and to the special session organizers for their dedication. Your valuable contributions are the true cornerstone of this event's success.

Special thanks go to TASSE for trusting us with this prestigious conference, and to the secretariat staff and organizing committee for their tireless support.

On behalf of the organizing and planning committees, thank you for joining us. While in Aomori, we highly encourage you to explore its beautiful landscapes, rich cultural heritage, and world-famous culinary delights. We wish you a highly fruitful conference and a memorable stay in Aomori, Japan!

General Chairs

Shun-Feng Su

Po-Lei Lee

Li-Wei Ko

Chia-Wen Chang

ORGANIZING COMMITTEE

Honorary Chairs

Tsu-Tian Lee (National Taipei University of Technology, Taiwan)
Chin-Wan Tao (National Ilan University, Taiwan)
Chia-Feng Juang (National Chung Hsing University, Taiwan)

General Chairs

Shun-Feng Su (National Taiwan University of Science and Technology, Taiwan)
Po-Lei Lee (National Central University, Taiwan)
Li-Wei Ko (National Yang Ming Chiao Tung University, Taiwan)
Chia-Wen Chang (National Ilan University, Taiwan)

General Co-Chair

Chen-Chia Chuang (National Ilan University, Taiwan)

Program Chair

Jau-Yang Chang (National Formosa University, Taiwan)

Publication Chair

Hsu-Chih Huang (National Chung Cheng University, Taiwan)

Special Issue Chair

Jin-Tsong Jeng (National Formosa University, Taiwan)

Finance Chair

Chih-Ching Hsiao (National Formosa University, Taiwan)

Paper Award Chair

Mei-Yung Chen (National Taiwan Normal University, Taiwan)

Registration Chair

I-Fang Chung (National Yang Ming Chiao Tung University, Taiwan)

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Chih-Lun Chou (Ming Chuan University, Taiwan)

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Jia-Yush Yen (National Taiwan University of Science and Technology, Taiwan)
Wen-June Wang (National Central University, Taiwan)
Tzuu-Hseng S. Li (National Cheng Kung University, Taiwan)
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Chung-Hsien Kuo (National Taiwan University, Taiwan)
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Ching-Chih Tsai (National Chung Hsing University, Taiwan)
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Pei-Jun Lee (National Taiwan University of Science and Technology, Taiwan)
Gwo-Ruey Yu (National Chung Cheng University, Taiwan)
Wen-Jer Chang (National Taiwan Ocean University, Taiwan)
He-Sheng Wang (National Taiwan Ocean University, Taiwan)
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Ching-Ming Lai (National Chung Hsing University, Taiwan)
Sendren Sheng-Dong Xu (National Tsing Hua University, Taiwan)
Yen-Chen Liu (National Cheng Kung University, Taiwan)
Yen-Lin Chen (National Taipei University of Technology, Taiwan)
Chun-Fei Hsu (Tamkang University, Taiwan)
Huei-Yung Lin (National Taipei University of Technology, Taiwan)

CONFERENCE VENUE AND TRANSPORTATION

ICSSE 2026 will be held on the **3rd floor** of the Aomori City Culture Hall in Aomori, Japan.

Aomori City, located at the northernmost tip of Japan's main island (Honshu), is renowned for its spectacular natural scenery, rich cultural heritage, and world-class apples. The venue is conveniently situated in the heart of the city, providing easy access to hotels, dining, and scenic local attractions.

Important Notice:

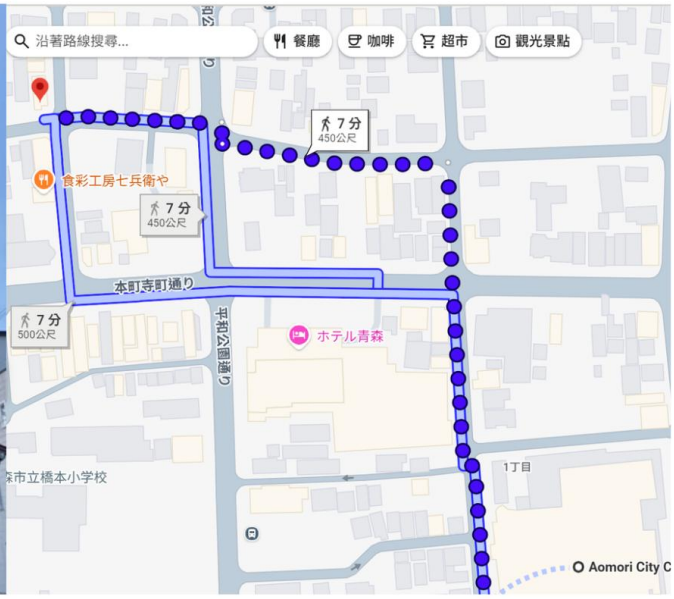
- Please be advised that the conference venue and the registration desk will open to attendees starting from **9:30 AM on August 10**.
- Address: **1-4-1 Honcho, Aomori, 030-0802, Japan**.
- Access: Approximately a 15-minute walk or a 5-minute taxi ride from JR Aomori Station.
- Taxis: Readily available outside JR Aomori Station, Shin-Aomori Station, and Aomori Airport.
- On Foot: Downtown Aomori is highly walkable. Major hotels, restaurants, and famous seaside attractions like A-FACTORY and the Nebuta Museum Wa Rasse are within a comfortable walking distance from JR Aomori Station and the Aomori City Culture Hall.

MAP Information

https://maps.app.goo.gl/ttmRETRmZA6RYLzU6

WELCOME RECEPTION VENUE

- Venue: ねぶたの国 たか久 (Nebutanokuni Takakyu) — Experience traditional Tsugaru Shamisen live performances and local culture.
- Address: 5-6-11 Honcho, Aomori, 030-0802, Japan
- Access: Approximately a 7-minute walk (450 m) from the conference venue (Aomori City Culture Hall).



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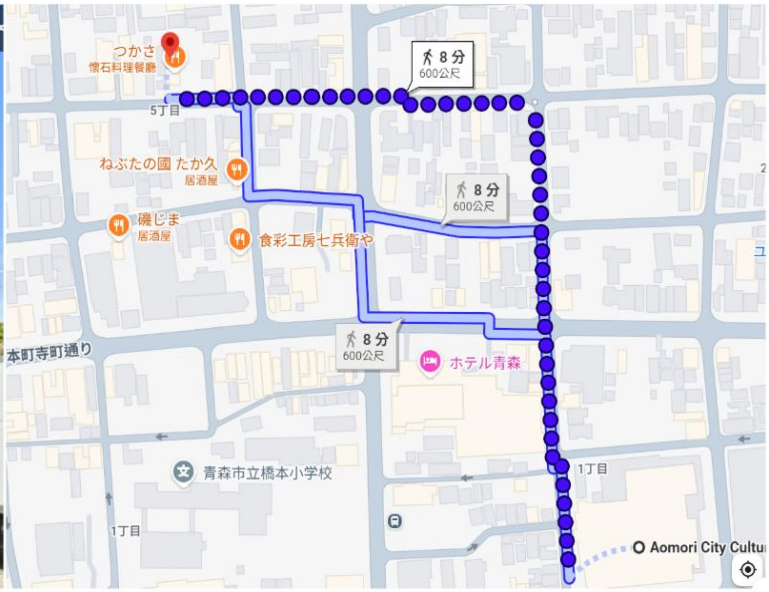
BANQUET

- Venue: つかさ(Tsukasa) — A traditional Japanese restaurant (Ryotei/Kappo) in Aomori.
- Address: 5-7-17 Honcho, Aomori, 030-0802, Japan
- Access: Approximately an 8-minute walk (600 m) from the conference venue (Aomori City Culture Hall).



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INTRODUCTION TO KEYNOTE SPEECHES

KEYNOTE SPEECH I

8/10 13:10~14:00

Prof. Chia-Feng Juang

Chair Professor, IEEE Fellow
Department of Electrical Engineering
National Chung Hsing University, Taiwan

Abstract

AI has emerged as a popular research topic in recent years, demonstrating significant success across various applications. However, most AI models operate as black boxes, making it difficult to explain the reasoning behind their decisions. In response to this challenge, explainable AI (XAI) has garnered substantial attention from researchers. Approaches to achieving XAI generally fall into two categories: intrinsic model interpretability and post-hoc explanations. In this speech, I will introduce a series of visually interpretable fuzzy neural networks (VIFNNs) that we have developed. The VIFNNs employ fuzzy if–then rules to process deep convolutional feature maps extracted from images. All the rules are learned through both structural and parameter learning. To enable visual interpretation of these learned fuzzy rules, I will present a technique that employs a deep decoder to map the antecedent of a fuzzy rule to an image. I will also discuss how Gradient-weighted Class Activation Mapping (Grad-CAM), a widely used method, is used for post-hoc explanations of image classification results within the VIFNN. The applications of VIFNNs to human-posture classification, glomerular morphology classification in medical images, and image-based robot localization will be presented.

Biography

Chia-Feng Juang received the B.S. and Ph.D. degrees in Control Engineering from the National Chiao-Tung University, Hsinchu, Taiwan, in 1993 and 1997, respectively. Since 2001, he has been with the Department of Electrical Engineering, National Chung Hsing University, Taichung, Taiwan, where he was

appointed Distinguished Professor in 2009 and has served as Chair Professor since 2025. He served as the Chapter Chair of IEEE Computational Intelligence, Taipei Chapter, in 2017-2018. He has served as the President of Taiwan Fuzzy Systems Associations (TFSA) since 2026. Dr. Juang has authored or coauthored over 120 journal papers (including over 65 IEEE journal papers), four books, ten book chapters, and over 150 conference papers. His current research interests include computational intelligence, intelligent control, computer vision, intelligent robots, and AI-aided medical diagnosis.

Dr. Juang was the receipt of the Outstanding Electrical Engineering Professor Award from Chinese Institute of Electrical Engineering, Taiwan, in 2019; the Outstanding Research Award from Ministry of Science and Technology, Taiwan, in 2021; and the Outstanding Research Award from National Science and Technology Council, Taiwan, in 2026. He was elevated to IEEE Fellow in 2019 and International Fuzzy Systems Association (IFSA) Fellow in 2023. He was an IEEE Computational Intelligence Society Distinguished Lecture during 2020-2023. He is currently an Associate Editor for IEEE Transactions on Fuzzy Systems and Asian Journal of Control and an Area Editor for International Journal of Fuzzy Systems.

Introduction to Keynote Speeches

Keynote Speech II

8/10 14:10~15:00

Yang-Chung Chang

Senior Field Applications Engineer
Analog Devices, Inc. (ADI)

Abstract

In rapidly evolving and high-barrier markets, competing on component specifications alone is no longer enough to secure market leadership. Drawing from the success in the Taiwan drone industry, Albert Chang will share a transformative approach: shifting the engagement model from “component” to “system-level empowerment.”

This presentation will highlight three strategic pillars:

1. Market Insight: Addressing critical customer pain points, specifically system complexity and the urgent need for faster Time to Market.
2. Technical Strategy: Moving beyond chips to “speak the language of systems,” integrating industry-leading Control, Communication, and Power solutions into cohesive subsystem architectures.
3. Proven Success: Featuring the “Polar Star” project—a flight control and navigation reference design—as a prime example of how hardware demonstration boards can lower development barriers and build deep customer trust.

The conclusion offers a scalable blueprint for success: by providing system-level reliability and reference designs, we become indispensable strategic partners in the customer’s journey to innovation.

Biography

Yang-Chung Chang (Albert Chang) is a Senior Field Applications Engineer currently at Analog Devices, Inc. (ADI). He possesses deep expertise in Unmanned Aerial Systems (UAS) and inertial navigation. He is also dedicated to advocating for modular avionics architectures and integrating industrial-grade MEMS IMUs to

solve navigation challenges in GPS-denied environments.

As the System Architect for the “Polar Star” flight control project, he successfully demonstrated the advanced navigation capabilities of the hardware platform. Leveraging his system-level technical expertise and the strong customer trust he has cultivated, he has driven a remarkable 12x revenue growth since joining ADI in September 2022. Furthermore, he is deeply committed to ecosystem building, actively fostering tighter connections and collaborations between Taiwan’s academic and industrial sectors to establish a robust domestic drone supply chain network.

Prior to joining ADI, he served as a System & Test Group Leader and R&D/Project Engineer in the Department of Navigation Systems at the National Chung-Shan Institute of Science & Technology (NCSIST). During his tenure, he led cross-functional teams in the design, testing, and production of navigation platforms, and designed a next-generation navigation system that significantly enhanced modularity and precision. Regarding his education, he earned a Master in Electrical Engineering from the National Taiwan University of Science and Technology (NTUST) in 2017, and a Bachelor in Electrical Engineering from Chung Yuan Christian University (CYCU) in 2013.

Introduction to Keynote Speeches

Keynote Speech III

8/11 13:00~13:50

Prof. Yusuke Nojima

Professor, Graduate School of Informatics,
Osaka Metropolitan University, Japan

Abstract

Fuzzy rule-based classifiers have long attracted attention as interpretable AI models because they can explain the rationale behind their decisions through the antecedent conditions of their fuzzy rules. However, ensuring the reliability of classification results remains a major challenge, especially in critical fields such as medicine and finance, where misclassification can significantly harm users. This talk presents a series of studies on evolutionary fuzzy classifier design with reject options that withhold unreliable classifications near decision boundaries. Although conventional threshold-based reject options improve reliability, they often reject more patterns than necessary. To address this, we first introduce a two-stage reject option in which a machine learning model serves as a second opinion: if the fuzzy classifier and the second-opinion model agree, the rejection is withdrawn, achieving a better accuracy-rejection trade-off. Second, we present a hierarchical fuzzy classifier that uses rejection as a relay mechanism among classifiers of varying complexity obtained via multiobjective fuzzy genetics-based machine learning, substantially reducing the average number of attributes required for inference. Third, we describe a partially interpretable model that applies an interpretable fuzzy classifier to as many patterns as possible while deferring hard patterns to an accurate black-box model. Finally, we discuss design principles for trustworthy AI systems that know when not to decide.

Biography

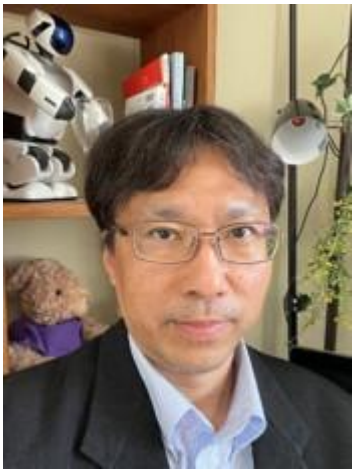
Yusuke Nojima received the B.S. and M.S. degrees in Mechanical Engineering from Osaka Institute of

Technology, Osaka, Japan, in 1999 and 2001, respectively, and the Ph.D. degree in System Function Science from Kobe University, Hyogo, Japan, in 2004. From 2004 to 2022, he was with Osaka Prefecture University, Osaka, Japan, where he became a Professor in the Department of Computer Science and Intelligent Systems in October 2020. Since April 2022, he has been a Professor in the Department of Core Informatics, Graduate School of Informatics, Osaka Metropolitan University, Osaka, Japan. Since April 2026, he has also served as Vice Dean of the Graduate School of Informatics. His research interests include evolutionary fuzzy systems, evolutionary multiobjective optimization, and multiobjective data mining. He has published 70 international journal papers and over 270 international conference papers and was selected as one of the World's Top 2% Scientists (Elsevier/Stanford citation indicators, August 2025 update). He was a guest editor for several special issues of international journals, chaired the Task Forces on Evolutionary Fuzzy Systems and on Competitions within the Fuzzy Systems Technical Committee of the IEEE Computational Intelligence Society, and served as an Associate Editor of IEEE Computational Intelligence Magazine. He is currently President-Elect of the International Fuzzy Systems Association (IFSA).

Introduction to Keynote Speeches

Keynote Speech IV

8/11 14:00~14:50



Prof. Naoyuki Kubota

Department of Mechanical Systems Engineering
Graduate School of Systems Design
Director of Community-centric Systems Research Center
Tokyo Metropolitan University, Japan

Abstract

Recently, the rate of elderly people living alone has increased and this has become a serious problem in many countries. Community-centric systems (CcS) are becoming increasingly important as a new paradigm in the aging society. Information and communication technology (ICT) has been introduced in human-centric systems (HcS) to improve the quality of life (QoL), and can also strengthen the social relationship to improve the quality of community (QoC). Improving both QoL and QoC together can extend the healthy life expectancy of elderly people. Topological intelligence is a promising direction to deal with various issues in CcS, because topological intelligence can flexibly and adaptively handle the features and relationships in target problems. In this talk, I first will introduce the background of CcS and its relationship with systems science, cyber-physical-X systems, and data-X approaches. Next, I will explain the role of topological intelligence in CcS and show several application examples to trailer living laboratories and robot partners. Finally, I will discuss the applicability of topological intelligence in CcS and its future directions.

Biography

Naoyuki Kubota is currently a Professor in the Department of Mechanical Systems Engineering, the Graduate School of Systems Design, and Director of Community-centric Systems Research Center, Tokyo Metropolitan University, Japan. He received a doctoral degree from Nagoya University, Japan, in 1997. He joined Osaka Institute of Technology and Fukui University, Japan. He was an Associate Professor from 2005

to 2012, and a Professor from 2012 at the Graduate School of Systems Design, Tokyo Metropolitan University, Japan. He was a Visiting Professor at University of Portsmouth, UK, Seoul National University, and others. His current interests are in the fields of topological intelligence, robot partners, and informationally structured space. He has published more than 500 refereed journal and conference papers in the above research fields. He was an associate editor of the IEEE Transactions on Fuzzy Systems from 1999 to 2010, the IEEE CIS Intelligent Systems Applications Technical Committee, Robotics Task Force Chair from 2007 to 2014, IEEE Systems, Man, and Cybernetics Society, Japan Chapter Chair from 2018 to 2021, IEEE Transactions on Affective Computing Steering Committee Member since 2019, and others.

PROGRAM AT A GLANCE

8/9 (Sunday)	
Conference Venue Preparation	
16:00-18:00	**Registration** **Dinner Restaurant**
18:00-20:00	**Welcome Reception** **Dinner Restaurant**

8/10 (Monday)			
09:30-16:00	**Registration** **Conference Venue**		
	Room-A	**Room-B**	**Room-C**
10:00-12:00	**(S1-A)** Intelligent Computing & Healthcare	**(S1-B)** Smart Control and Multi-Domain Applications	**(09:30-12:30)** Special Issue – IJFS
	Chair: Prof. Chih-Min Lin	Chair: Prof. Meng-Yun Chung	Chairs: Prof. Jin-Tsong Jeng, Prof. Chen-Chia Chuang, Prof. Shun-Feng Su
	#1001, #1002, #1011, #1038, #1044, #1045, #1105	#1003, #1009, #1015, #1082, #1083, #1110	#1066, #1074, #1087, #1088
13:00-15:00	**Opening Ceremony**	**(S2-B)** Advanced Algorithms and Systems Engineering	**(S2-C)** Systems Engineering and Smart Infrastructure
	Keynote Speech - I Towards Explainable AI Using Deep Fuzzy Neural Networks for Image Classification and Regression **Prof. Chia-Feng Juang**	Chair: Prof. Primoz Podrzaj	Chair: Prof. Wai Yie Leong
	Keynote Speech - II Empowering the Future: A System-Driven Strategy on UAV industry **Yang-Chung Chang**	#1036, #1076, #1077, #1078, #1123, #1131	#1006, #1007, #1012, #1035, #1127
15:30-18:00	**(S3-A)** Biomedical and Signal Processing Applications	**(S3-B)** Biomedical Systems and Intelligent Sensing	**(S3-C)** Intelligent Systems and Their Applications
	Chair: Prof. Chia-Feng Juang	Chair: Prof. Jih-Huah Wu	Chair: Prof. I-Hsum LI
	#1067, #1072, #1090, #1111, #1132, #1134	#1039, #1095, #1100, #1106, #1107, #1109, #1139	#1020, #1060, #1086, #1092, #1093, #1101, #1121

8/11(Tuesday)			
	Room-A	**Room-B**	**Room-C**
10:00-12:00	**(S4-A)** Intelligent Learning Control System	**Best Paper Competition-I** Biomedical Informatics & Smart Health	**Best Student Paper Competition-I** Advanced Deep Learning & Information Processing
	Chair: Prof. Ching-Chih Tsai	Chairs: Prof. Ching-Hung Lee and Prof. Po-Lei Lee	Chairs: Prof. I-Fang Chung and Prof. Chun-Fei Hsu
	#1016, #1042, #1047, #1073, #1091, #1117, #1129	#1005, #1049, #1055, #1122, #1133, #1137	#1043, #1051, #1075, #1094, #1130, #1136
13:00-15:00	**Keynote Speech - III** Designing Fuzzy Classifiers that Know Their Limits: Accuracy, Cost, and Partial Interpretability **Prof. Yusuke Nojima**	**Best Paper Competition-II** Edge Intelligence & Optimization Systems	**Best Student Paper Competition-II** Intelligent Systems & Robotic Applications
		Chairs: Prof. Gwo-Ruey Yu and Prof. Huei-Yung Lin	Chairs: Prof. I-Fang Chung and Prof. Chun-Fei Hsu
	Keynote Speech – IV Topological Intelligence in Community-centric Systems **Prof. Naoyuki Kubota**	#1010, #1018, #1056, #1096, #1098, #1114	#1008, #1052, #1053, #1054, #1065, #1089, #1102
15:10-16:40	**(S5-A)** Multimodal Intelligent Sensing Technology and Applications	**(S5-B)** Advanced Control and Intelligent Systems	**(S5-C)** Artificial Intelligence in Unmanned Vehicle Application
	Chairs: Prof. Chiao-Wen Kao and Prof. Chi-Sheng Huang	Chair: Prof. Pei-Jun Lee	Chair: Prof. Shu-Yin Chiang
	#1023, #1071, #1084, #1126, #1138	#1026, #1034, #1040, #1041, #1112	#1033, #1061, #1068, #1119, #1124
18:00-20:00	**Dinner Banquet**		

8/12 (Wednesday)	
10:00-11:00	**Poster Session - I**
	Chairs: Prof. Jinn-Tsong Tsai and Prof. Fu-I Chou
	#1013, #1019, #1021, #1022, #1025, #1027, #1028, #1030, #1031, #1032, #1048, #1057, #1058, #1059, #1063, #1069
11:00-12:00	**Poster Session - II**
	Chairs: Prof. Jau-Yang Chang, Prof. Song-Shyong David Chen, and Prof. Chih-Ching Hsiao
	#1070, #1079, #1081, #1085, #1097, #1099, #1103, #1104, #1113, #1115, #1125, #1128, #1140, #1141

Technical Session Details

August 10, 2026 | 10:00-12:00

Location: Room-A

Intelligent Computing & Healthcare

Chair: Prof. Ren Guey Lee

[ID: #1001]

High-Speed Transmission ASIC Design as a Bridge for Communication Between Ethernet and USB 4.0

Guo-Ming Sung, Chen Chen, Chwan-Lu Tseng, Jen-Hsiang Chou

[ID: #1002]

Direct Torque Control ASIC for a Three-Phase Induction Motor Using a PID Speed Controller and a Seven-Level Flux/Torque Error Fuzzy Controller

Guo-Ming Sung, Chen Chen, Chao-Rong Chen, Ching-Yin Lee

[ID: #1011]

Constructing Tea Plant Environmental Control Through an Actor-Critic Mechanism

Wen-Tsai Sung, Indra Griha Tofik Isa, Sung-Jung Hsiao

[ID: #1038]

A Sensor-Assisted Music Therapy System for Assessing Hand-Eye Coordination and Reaction Timing in Older Adults

Pei-Chia Huang, Chun-Chieh Hsiao, Ren Guey Lee, Chwan-Lu Tseng

[ID: #1044]

A Dual-Branch CNN with Weight Sharing for Breast Lesion Classification

Van-Vu Ngo, Lo-Yi Lin, Chih-Min Lin

[ID: #1045]

SAC-BPPO: Behavior-Preserving Fine-Tuning for Safe Humanoid Locomotion

Quoc-Cuong Nguyen, Pham Duc-Hung, Chih-Min Lin

[ID: #1105]

Deep Learning-based Data Imputation Techniques for Smart Meters with Missing Data

Chao-Rong Chen, Chen-Wei Lin

August 10, 2026 | 10:00-12:00

Location: Room-B

Smart Control and Multi-Domain Applications

Chair: Meng-Yun Chung

[ID: #1003]

Edge Control and Smooth Trajectory Planning for Mobile Robots via RISC-V Custom Instructions

Chao-Jie Luo, Yu-Wen Li, Chia-Wen Chang, Chin-Wang Tao

[ID: #1009]

Precise Water Cannon Engagement System for Dynamic Targets: Based on Visual Servoing and Ballistic Prediction

Sung-Wen Wang

[ID: #1015]

Edge Intelligence Security: A BN-LightGBM-Based Lightweight Intrusion Detection Framework and Benchmark Validation for the Internet of Vehicles

Hui-Chen Yang, Hsien-Cheng Chou, Chienlin Chiang

[ID: #1082]

Digital Twin-Based Intelligent HVAC Control for Underground Metro Stations under Piston Effect

Meng-Yun Chung, Chien-Kai Weng, Yao Lee, Nien-Lun Hsueh, Ann-Cheng Wang

[ID: #1083]

Digital Twin-Based Airflow Control and Thermal Comfort Optimization in Semi-Open MRT Station Spaces

Meng-Yun Chung, Nien-Lun Hsueh, Yao Lee, Chien-Kai Weng, Ann-Cheng Wang

[ID: #1110]

Beam Aligning for Remote Motorcycle Emission Inspection by Deep Learning Image Recognition

Yaojung Shiao, Chun Wei Liu

August 10, 2026 | 09:30-12:30

Location: Room-C

Special Issue - IJFS

Chairs: Prof. Jin-Tsong Jeng, Prof. Chen-Chia Chuang, Prof. Shun-Feng Su

[ID: #1066]

Optimization of High-Speed Milling Processes via Intelligent Modeling for Energy Conservation, Carbon Reduction, and Sustainable Manufacturing

Shuo Hung Chang, Wei Tai Huang

[ID: #1074]

PSO-Optimized Fuzzy PID Control Framework for Nonlinear Self-Balancing Spherical Robots

Hao En Yeh, Guan Chen Chen

[ID: #1087]

Quantum-Inspired Computing by Linguistic Fuzzy Rules

Chao-Lieh Chen, Huynh Huy Nguyen

[ID: #1088]

Collaborative Deep Multi-View Fuzzy Clustering

Xiaoyu Zheng, Cong Chen, Jin Zhou, Rui Wang, C. L. Philip Chen, Yingxu Wang, Shiyuan Han, Chen, Lin Wang, Tao Du

August 10, 2026 | 13:00-15:00

Location: Room-B

Advanced Algorithms and Systems Engineering

Chair: Prof. Primoz Podrzaj

[ID: #1036]

Constrained multi-objective multi-task optimization algorithm based on improved adaptive perturbation and infeasible solution filtering with non-dominated sorting

Xuan Zhong Wang, Lei Liu, Shenquan Wang

[ID: #1076]

Farmbot: mechatronics applied to agriculture

Primoz Podrzaj, Miha Prudič, Tomaz Pozrl, Luka Selak, Gasper Skulj

[ID: #1077]

Educational Approaches for Teaching Artificial Intelligence on Video Databases

Primoz Podrzaj, Jan Pleterski, Tomaz Pozrl, Luka Selak, Gasper Skulj

[ID: #1078]

Comparative Analysis of YOLOv8 Models for Traffic Sign Detection in Real-World Conditions

Primoz Podrzaj, Alen Planinsec

[ID: #1123]

Graphics-Driven Analysis of the Digital Divide: Technology Access and Usage in Saudi Arabia

A'aeshah Alhakamy

[ID: #1131]

Multi-Classifier for Indonesian Household Electricity Expenditure Using Machine Learning and Ensemble Learning

Jurike V Moniaga, Syarifah Diana Permai, Ferry J Dinata, Sthiwen Christopher Anggarai, Bryan Christopher Yauri, Ferry Jie

August 10, 2026 | 13:00-15:00

Location: Room-C

Systems Engineering and Smart Infrastructure

Chair: Prof. Wai Yie Leong

[ID: #1006]

System-of-Systems Architecture for Smart Manufacturing Corridors in Malaysia

Wai Yie Leong

[ID: #1007]

AI-Driven Systems Engineering for Sustainable Urban Transportation Networks in Kuala Lumpur

Wai Yie Leong

[ID: #1012]

AutoFV: A Framework for Rapid Formal Verification Bring-Up

Jesus Eduardo Esparza Soto, Susana Ortega, Rivera Migue, Pedro Mejia-Alvarez, Baungarten Emilio

[ID: #1035]

Efficient AI-Optimized Urban Green Infrastructure Planning for Carbon-Neutral Malaysian Cities

Wai Yie Leong

[ID: #1127]

Concept Drift Detection Empowered Machine Learning: Enhancing Continues Swing Trade Signal Prediction

Yin-Chia Hsieh, Ya-Chiao Liu, Fan Wu

August 10, 2026 | 15:30-18:00

Location: Room-A

Biomedical and Signal Processing Applications

Chair: Prof. Chia-Feng Juang

[ID: #1067]

ECG-Based Acute Kidney Injury Detection via Deep Learning

Ying-Hsuan Yang, Tzu-Ping Tsai, Cho-Yi Chen

[ID: #1072]

Leveraging Pixel-Level Growth Pattern Annotations to Enhance Lung Adenocarcinoma Prognosis Prediction

Yu Chen Tu, Yi Chen Yeh, Kung Hao Liang, Yen-Hua Huang

[ID: #1090]

Biologically Informed Residual Graph Learning for Predicting Mild Cognitive Impairment Progression from FDG-PET Brain Networks

Sheng-Yao Huang, Hao-Chien Cheng, Jihng-Kuo Ho, I-Fang Chung

[ID: #1111]

Semi-Supervised Vertebral and Intervertebral Disc Segmentation in Spinal MRI via Cross-Source Mean Teacher Learning

Pei-Rong Jiang, Kai-Xuan Xu, Po-Kai Su, Meng-Lei Su, Jiann-Her Lin, Hsiao-Chi Li

[ID: #1132]

Automated Coronary Artery Calcium Scoring on Low-Dose CT Using Deep Learning

Yun-Ting Lee, Hsin-Bang Leu, Han-Jui Lee, Kung Hao Liang, I-Fang Chung

[ID: #1134]

Differentiating Mesangial and Glomerular Capillary Wall Immunofluorescence Patterns through Automated Glomerulus Detection

Yu-Li Tung, Chia-Tien Hsu, Ya-Wen Chuang, Chia-Feng Juang, I-Fang Chung

August 10, 2026 | 15:30-18:00

Location: Room-B

Biomedical Systems and Intelligent Sensing

Chair: Prof. Jih-Huah Wu

[ID: #1039]

Segmentation and Temporal Analysis of Temperature Distribution in Chronic Kidney Disease Patients Treated with Photobiomodulation

Yu-Ting Chang, Fang-Yu Yeh, Bo-Wei Huang, You-Jun Wang, Yi-Ping Chang, Jih-Huah Wu, Chih-Ching Lin, Chuan-Tsung Su

[ID: #1095]

Design and Implementation of an IoT-Based PV/T System for Domestic Energy Generation

Jih-Huah Wu, Yi-Chia Shan

[ID: #1100]

A Forehead EEG System for Real-Time Attention Monitoring in Real-World Settings

Cong-Ying He, Jin-Huai Chang, Po-Hsun Cheng, and Li-Wei Ko

[ID: #1106]

Nap Sleep Stage Classification System Using Single-Channel EEG via Domain Adaptation

Li-Wei Ko, Po-Han Lin, Cheng-Hua Su, Cong-Ying He

[ID: #1107]

Acupoint Finding system with a Laser and Four-Quadrant Photodetectors

Jih-Huah Wu, Po-Jui Kuo, Yu-Chen Ho, Fu-Chien Chiu, Yi-Chia Shan

[ID: #1109]

EEG-Based Classification of Normal Subjects Using Auditory Evoked Potentials

Li-Wei Ko

[ID: #1139]

A Tele-Operated Ultrasound Scanning System Using Multi-View 3D Reconstruction and Adaptive Fuzzy Neural Network Control

Po-Lei Lee

August 10, 2026 | 15:30-18:00

Location: Room-C

Intelligent Systems and Their Applications

Chair: I-Hsum LI

[ID: #1020]

Application of Physiological Data to Human-in-the-Loop Control of Soft Exoskeleton

Jyun-Rong Zhuang, Woei-Tyng Chang, Shih-Fong Wong, Chao-Shiang Yang

[ID: #1060]

Fuzzy-Tuned Cross-Coupling Sliding Mode Control for Synchronization of Skid-Steer Mobile Robots

Yi-Min Chou, Ji Rui Lin, Yih-Guang Leu

[ID: #1086]

Ground-Level Small Obstacle Perception and Navigation Integration Method Based on Object Detection and Depth Information

Hong-Syuan Lin, Yi-Cheng Huang

[ID: #1092]

Vision-Based Distance Estimation and Reactive Obstacle Avoidance for Wind Turbine Inspection Using UAVs

Chau-Chung Song, Yen-Hui Lee, Jia-Wen He, Chao-Ming Wu

[ID: #1093]

Water-Aware Dynamic Task Scheduling for Unmanned Surface Vehicles with Online Waypoint Insertion

Chau-Chung Song, Shih-Yu Chou, Chien-Chih Lin, Ye Shun Shen

[ID: #1101]

An End-to-End PTZ Camera Tracking System for Smart Factory Inspection Using Reinforcement Learning

Chao-Ching Ho, Yan-You Liu, Su Yong-Jing, Yu-Xuan Peng

[ID: #1121]

5G Intelligent Driving Management System Based on Hierarchical Federated Deep Reinforcement Learning

Chih-Cheng Tseng, You-Lin Chen, Szu-Liang Wang

August 11, 2026 | 10:00-12:00

Location: Room-A

Intelligent Learning Control System

Chair: Prof. Ching-Chih Tsai

[ID: #1016]

Parameter Optimization of Micro-EDM Process for Inconel 718 Using Fuzzy Broad Learning System and Particle Swarm Optimization

Chen-An Wu, Ching-Chih Tsai

[ID: #1042]

UAV Trajectory Tracking Control Based on Wind Disturbance Rejection

Po-Wen Chen, Jih-Gau Juang

[ID: #1047]

Joint Wear Quantification and RUL Prediction from Image Sequences under Extreme Small-Sample Conditions

Hao-Tang Wang, Ching-Chih Tsai, Ali Rospawan

[ID: #1073]

Data-Driven Iterative Learning Contouring Control

Thanh-Quan Ta, Shyh-Leh Chen

[ID: #1091]

Sea-State-Aware Conditional Diffusion Framework for Maritime Radar Range-Aimuth Map Augmentation

Hsin-Yi Liu, Ching-Hung Lee

[ID: #1117]

MPPT for PV Systems Using Taguchi Quantum Particle Swarm Optimization

Gwo-Ruey Yu

[ID: #1129]

Validating Interdisciplinary AI Systems: Empirical Evidence from the BIAS Project

Soumya Kanti Datta, Mascha Kurpicz-Briki

August 11, 2026 | 10:00-12:00

Location: Room-B

Best Paper Competition-I：Biomedical Informatics & Smart Health

Chairs: Prof. Ching-Hung Lee and Prof. Po-Lei Lee

[ID: #1005]

Detection of Gene-Protein Association for COVID-19 From PubMed Using Association Rule Mining

Wen Cheng Lai

[ID: #1049]

A Pathway-Based Trimodal Deep Learning Framework with Large Language Model Mutation Embeddings for Cancer Survival Prediction

Che-Wei Liu, Yen-Jung Chiu, Yu-Jie Lin, Yen-Hua Huang

[ID: #1055]

A Non-contact Real-Time Pulse Rate Measurement System Based on an Edge Computing Platform

Yuan-Hsiang Lin, Jen-Chieh Chang, Chun-Chieh Wu, Han-Chun Tsai, Yu-Chen Hsieh, Wei-Hsun Chiu

[ID: #1122]

A Lightweight Human Trajectory Prediction Model for Efficient Multi-Agent Motion Forecasting

Ahmad Raza Iftikhar, Chung-Hsun Sun, Hsiang-Chieh Chen

[ID: #1133]

Magnification-Conditional Modulation Enables Cross-Feature Transfer in Frozen Pathology VLMs

Shang-Hsuan Huang, Yu-Ching Peng, I-Fang Chung

[ID: #1137]

Artificial Intelligence for Abnormality Detection in Capillary Electrophoresis

Si-Wei Chen, Hsin-Han Chen, Chuan-Po Li, Hsiang-Ling Ho, Shr-Jeng Leu, I-Fang Chung

August 11, 2026 | 10:00-12:00

Location: Room-C

Best Student Paper Competition-I：Advanced Deep Learning & Information Processing

Chairs: Prof. I-Fang Chung and Prof. Chun-Fei Hsu

[ID: #1043]

Leveraging Generative AI for Visualized Glycemic Impact Prediction and Dietary Guidance

Hsin Jui Juang, Bing-Fei Wu

[ID: #1051]

Application of Single-Cell GRN-Guided TF Activity in Survival Prediction and Regulatory Analysis of PDAC

Yu-Jie Lin, Yen-Jung Chiu, Che-Wei Liu, Yen-Hua Huang

[ID: #1075]

A Joint Rain-Streaks-Removing Network for Single Image Deraining

Tzu-Yang Lin, Yu-Hsuan Lee

[ID: #1094]

Visual Semantic Guidance for Low Light Image Enhancement

Jiang Yi-Ting, Ching-Hung Lee

[ID: #1130]

A Multi-Modal Deep Learning Framework for Automated Home-Based Sleep Apnea Detection

Shao-Xuan Luo, Emily Chia-Yu Su

[ID: #1136]

Gradient-Aware LoRA Subtraction for Rehearsal-Free Class-Incremental Learning

Jun-Fa Hsieh, Chiao-Wen Kao

August 11, 2026 | 13:00-15:00

Location: Room-B

Best Paper Competition-II：Edge Intelligence & Optimization Systems

Chairs: Gwo-Ruey Yu and Prof. Huei-Yung Lin

[ID: #1010]

Vision-Based Laser Deterrence for Real-Time Monkey Intrusion Detection Using Edge AI

Mochamad Rizal Fauzan, Irgi Surya, Yo-Ping Huang, Hwa-Ching Lin

[ID: #1018]

Constructive Feasibility and Fairness-Aware Optimization in Finite-Domain Nurse Scheduling via CP-SAT

Yen-Jui Chia, Hao-Tang Wang, Ya-Wen Lee, Ching-Chih Tsai

[ID: #1056]

C-Score: Beyond Accuracy for Robustness Assessment in Semi-Supervised Learning under Open-World Unlabeled Contamination

Tsao-Lun Chen, Chi-Cheng Fu, Han-Yi E Chou, Shun-Feng Su

[ID: #1096]

An Image Generation Framework for Objects Synthesis Based on Structural Representation and Spatial Localization

Chi-yao Weng, Peng You-Jyun, Lin Cheng-Han

[ID: #1098]

YOLO-Based Pose-Assisted Target Detection in Disaster Search and Rescue

Zi-Wei Wang, Shih-Yu Chen, Wei-Cheng Li, Zheng-Huang Liao, Chi-Sheng Huang

[ID: #1114]

AI-Enabled Systems Engineering Framework for Precision Poultry Farming Using IoT, Computer Vision, and Predictive Analytics

Wai Yie Leong

August 11, 2026 | 13:00-15:00

Location: Room-C

Best Student Paper Competition-II：Intelligent Systems & Robotic Applications

Chairs: Prof. I-Fang Chung and Prof. Chun-Fei Hsu

[ID: #1008]

Development of a Passive Upper Limb Exoskeleton with Shoulder and Back Support Assistance

Liang-Yu Lu, Jin-Yu Yang, Yu-Jen Chen, Lian-Wang Lee

[ID: #1052]

Free-Form Command Navigation: A Vision-Language Framework for Indoor Robot Navigation

Shao-Jung Chan, Lung-Yi Chung, Kuang-Yow Lian

[ID: #1053]

AI-Enabled Digital Twin System for Autonomous Underwater Vehicles in Coral Reef Monitoring and Environmental Intelligence

Chun Chen, Yen-Hsun Meng, Andy Khoo-Yuen Khai, Mu-Chun Su, Fan-Hua Nan, Yi-Zeng Hsieh

[ID: #1054]

Development of a Smart Plug Application for Sustainable Household Energy Management and Net Zero 2050 Goals

Claribel Sefira, Shih-Sung Lin, Chia-Wen Chang, Chin-Wang Tao

[ID: #1065]

Optimal Design of an Ultrasonic Vibration-Assisted Tool Holder Using a Genetic Algorithm with Multiple Fitness Functions Based on the Uniform Design Method

Bo Xun Ren, Yi-Cheng Pan, Wei Tai Huang

[ID: #1089]

Physics Based Crosslinking Yield Prediction Model for Epoxy Resin Film Coating

Hsuan-Yu Chen, Yuan-Fu Liu, Li-Ming Chang, Tseng Shih-Tswen, Lu Chang-Hsing, Chu Wen-Bing, Chan-Yun Yang

[ID: #1102]

Semantic-to-Continuous Motion Planning: A Tri-Level Architecture Integrating LLM, Heuristic Search and Curiosity-Driven DRL

Lu-Wei Huang, Ching-Chih Tsai

August 11, 2026 | 15:10-16:40

Location: Room-A

Multimodal Intelligent Sensing Technology and Applications

Chairs: Prof. Chiao-Wen Kao and Prof. Chi-Sheng Huang

[ID: #1023]

Millimeter Wave Radar and Intelligence Image Fusion Applied to Vehicle Collision Prevention

Wen Cheng Lai

[ID: #1071]

A Hybrid Approach Combining Deep Learning and Parametric Typhoon Models for Storm Surge Prediction on the East Coast of Taiwan

Wei-Ting Chao, Ting-Jung Kuo

[ID: #1084]

A study on Resistance Tracking of Memristor Model with Sliding Mode, PID and I-PID Control

Chen-Chia Chuang

[ID: #1126]

Development of a Long-Range Wi-Fi Communication Network for Ocean Sensing Data Transmission

Ting-Jung Kuo, Shun-Han Yang, Wei-Ting Chao, Xi-Yu Li, Yu-Chi Ling

[ID: #1138]

Integrating Fourier Attention for Semantic Segmentation Under Diverse Weather Conditions

Yu-Wei Jen, Chiao-Wen Kao

August 11, 2026 | 15:10-16:40

Location: Room-B

Advanced Control and Intelligent Systems

Chair: Prof. Pei-Jun Lee

[ID: #1026]

H2-Optimal Model-Matching Control with Enhanced Disturbance Rejection via Output-Error Weighting

Chi-Yang Chang, Cheng-Chung Tien, Mi-Ching Tsai

[ID: #1034]

A Compound Planetary Gear Coupling Architecture for High Gear Ratio Transmission Design

I-Haur Tsai, Chi-Yang Chang, Sheng-Lei Wu

[ID: #1040]

Asymmetric Dual-Backbone Network for Optical-SAR Heterogeneous Change Detection

Tsu-En Tien, Pei-Jun Lee, Chun Han Chen

[ID: #1041]

Variable-Rate DDM Compression Using a Lightweight Modulated Autoencoder with Window-Based Attention

Chun Han Chen, Pei-Jun Lee, Tsu-En Tien

[ID: #1112]

An Integrated 3D Shape Fitting and Dual-Hand Grasp Planning Framework for AI Service Robots via Metaheuristics

Yu-Chen Chen, Szu-Han Yu, Tzuu-Hseng S. Li

August 11, 2026 | 15:10-16:40

Location: Room-C

Artificial Intelligence in Unmanned Vehicle Application

Chair: Prof. Shu-Yin Chiang

[ID: #1033]

Design of a Flight Switching and Self-Stabilizing Control System for Multi-Mode Unmanned Aerial Vehicles

Chun-Fei Hsu, Shao-Hua Lee

[ID: #1061]

Design of a Sound Recognition-Based Intelligent System for Quadruped Robots

Shu-Yin Chiang

[ID: #1068]

An Energy-Efficient Event-Driven Edge AI Framework for UAVs with SoC-Aware DVFS

Ching-Tung Lo

[ID: #1119]

Universal Output Feedback Control Design for Uncertain p-normal Form Systems with Asymmetric Output Constraints

Shin-Yu Wu, Hsiang-Yu Hsieh, Chih-Chiang Chen

[ID: #1124]

Vision-Based Feedback Control for a Mecanum-Wheel Robot in Basketball Tracking Applications

Chun-Fei Hsu, Chun-Hao Liao

August 12, 2026 | 10:00-11:00

Poster Session – System Development, Control, and Optimization

Chairs: Prof. Jinn-Tsong Tsai and Prof. Fu-I Chou

[ID: #1013]

Load-Modulation-Based Feedback for Battery-State Transmission in a Wireless Charging System with Selective Balancing

Chia Hsuan Wu, Liang-Rui Chen

[ID: #1019]

A Speech-Guided Vision-Language-Action Framework for Robotic Task Execution

Guan-Ting Chen, Jhen-Yun Wu, Cheng-Wei Huang, Chi-En Shi, Shih-Ting Wang, I-Hsum Li

[ID: #1021]

Modeling and Analysis of a Dual-Input Planetary Gear-Based Electromechanical Power Inverter

I-Haur Tsai, Chi-Yang Chang, Sheng-Lei Wu

[ID: #1022]

Application of Knowledge Distillation-Based Lightweight Mask RCNN for Object Detection and Instance Segmentation

Liang-Yu Lu, Jin-Yu Yang, Yu-Chen Liu, Lian-Wang Lee

[ID: #1025]

Unsupervised Domain Adaptation for High Dynamic Range Image Semantic Segmentation under Adverse Weather

Ming-Yiao Chen, Huei-Yung Lin

[ID: #1027]

Time-Varying Trajectory Tracking Control of Redundant Mobile Robots

Hsu-Chih Huang

[ID: #1028]

Global Path Planning for Mobile Robots Using Generative Adversarial Network

Hsu-Chih Huang

[ID: #1030]

Design of a Speech Recognition Model with Temporal Feature Fusion and Attention Mechanism

Hsuan-Ming Feng, Ching-Chang Wong, Shih-An Li

[ID: #1031]

Integrating mental health risk prediction into diabetes care: A machine learning study of anxiety and depression in type 2 diabetes mellitus

Tung-Kuan Liu, Han-Ming Kuo, Yao-Mei Chen, Wei-Ling Tang, Shi Hon-Yi

[ID: #1032]

A Study on Neural Networks Based on Dynamic Equations for the Inverse Dynamics of a Six-Axis Robotic Manipulator

Bo-Lin Wu, Yu-Cheng Liao, Fu-I Chou, Po-Yuan Yang

[ID: #1048]

A Hierarchical Control Framework with Decomposable Latency Taps for Six-Axis Manipulators

Yenting Chen, Yu-Cheng Liao, Fu-I Chou, Po-Yuan Yang

[ID: #1057]

Super Twisting Sliding Mode Control for LCCL-LC Wireless Power Transfers

Tsung-Sheng Chuang, Jenq-Lang Wu

[ID: #1058]

Integrated Robust Formation and Collision Avoidance Control of Quadrotors under Modeling Uncertainties and Disturbances

Shun-Hung Tsai, Hsun-Chieh Chan, Man-Jung Lee

[ID: #1059]

Inverse Kinematics Prediction and Pose Error Analysis of Multi-Axis Robotic Arms Based on Neural Networks

Yan-Jie Yang, Yu-Cheng Liao, Fu-I Chou, Po-Yuan Yang

[ID: #1063]

Bidirectional Mamba for Multi-View Online Action Detection

Yang Lu, Liping Xie, Weili Guo

[ID: #1069]

Design of a Badminton Motion Analysis and Evaluation Mechanism Based on Human Pose Estimation Technology

Jau-Yang Chang

August 12, 2026 | 11:00-12:00

Poster Session – Artificial Intelligence Cognition and Applications

Chairs: Prof. Jau-Yang Chang, Prof. Song-Shyong David Chen, and Prof. Chih-Ching Hsiao

[ID: #1070]

Development of a Deep Learning-Based Landmark Positioning System for Active In-Vehicle Safety Monitoring

Jau-Yang Chang

[ID: #1079]

Optimal Design of a Dual-Axis Ultrasonic Vibration-Assisted Machining Platform System

Yi-Cheng Pan, Bo Xun Ren, Jinn-Tsong Tsai, Wei Tai Huang

[ID: #1081]

An Automated Quantitative Analysis and Visualization System for Eyes-Closed Resting-State EEG Background Activity

Chen-Sen Ouyang

[ID: #1085]

Stability of Virtual Reality Haptic Feedback Incorporating BPNN-Optimized Fuzzy-Passivity Control

Yungte Chen, Ping-Nan Chen

[ID: #1097]

An Efficient YOLO11n Architecture with Dual-Scale Feature Extraction for PCB Surface Defect Detection

Song-Shyong Chen, Shih-Chun Chien, and Chau-Chung Song

[ID: #1099]

From Semantic Goals to Maneuver Execution: An Occupancy-Grid-Grounded Hybrid Navigation Framework for Indoor AMR

Jyun-Hong He, Yen-Lin Chen, Hsin Han Chiang, Hsiao-Chi Li

[ID: #1103]

A Matrix Similarity-based Deep Learning Method for Fine-Grained Skin Disease Classification

Yen-Lin Chen, Belal Ahmad

[ID: #1104]

Attention-Guided Dual-Channel Adversarial Learning for Synthetic Polyp Generation and Automated Detection

Yen-Lin Chen, Belal Ahmad

[ID: #1113]

The Proportional-Derivative State Feedback Control Design for the Linear Stochastic Descriptor System

Chien-Feng Wu, Wei-Yu Chiu

[ID: #1115]

Event-Triggered Quantized Finite-Time Fuzzy Control for Nonlinear Ship Rolling Motion Systems with Fin Stabilizers Subject to Cyber-Attacks

Wen-Jer Chang, Arumugam Arunkumar, Yann-Horng Lin

[ID: #1125]

Integrating Rough Set Theory with Kolmogorov-Arnold Networks for Enhanced Interpretability

Chih-Ching Hsiao, Chen-Chia Chuang

[ID: #1128]

Website UI/UX on User Experience - A Case Study of Uber Eats and Food Panda

Yin-Chia Hsieh

[ID: #1140]

AI Song Conversion System on KTV Template

Kai-Han Xiao, Kai-Ming Chang, Xian-Ting Lan, Jin-Tsong Jeng

[ID: #1141]

AI-Assisted Fitness Posture System

Jheng-Jie Cai, Pei-Hui Lin, Yu-Jie Xie, Jin-Tsong Jeng