

**PROGRAM DIGEST**

# ICIA 2025

**2025 International Conference  
on Information and Automation**



*Lanzhou China*

August 28-31, 2025

# 2025 International Conference on Information and Automation (ICIA 2025)

August 28-31, 2025  
Lanzhou, China

## Conference Program Digest

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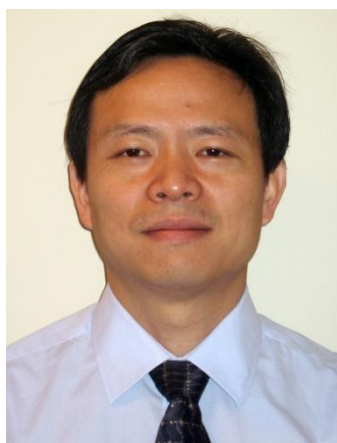
# WELCOME

On behalf of the Organizing Committee, we extend our warmest welcome to all delegates attending the International Conference on Information and Automation (ICIA 2025) in Lanzhou, China, from August 28 to 31, 2025. As a premier forum for advancing robotics, automation, and intelligent systems research, ICIA continues to bridge global innovations with industrial and academic excellence.

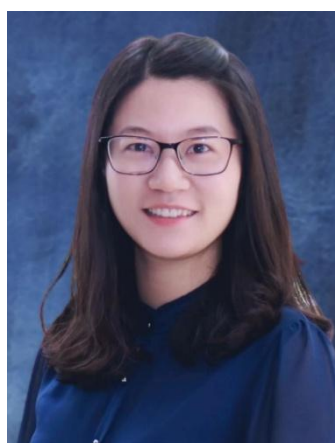
This year's conference received 170+ initial paper submissions from researchers spanning 12 countries and regions. The technical program will unfold over three days through parallel sessions, workshops, and exhibitions. We are very pleased to have invited Professor ZHOU Mengchu of New Jersey Institute of Technology, USA, Professor TAN Ying of the University of Melbourne, Australia, Professor ZHANG Jianwei of Hamburg University, Germany, and Professor LIU Peter. X of Carleton University, Canada, to deliver four plenary talks. ICIA 2025 strives to offer all participants a great experience with excellent technical and social programs.

We thank the International Program Committee for their meticulous reviews, the Organizing Committee for their tireless coordination, and our dedicated volunteers for ensuring seamless operations. Most importantly, we express gratitude to all participants from 12 countries and regions for enriching this global knowledge exchange. Beyond the conference, we invite you to explore Lanzhou—a historic Silk Road hub where the Yellow River carves through ancient landscapes. Visit the Rainbow Mountains (Danxia), ascend the Yellow River Tower, or savor hand-pulled beef noodles in the bazaars. May your time in China be both professionally inspiring and culturally memorable.

We wish you an exceptional ICIA 2025 experience!



GU Jason J.  
General Chair



YUAN Yixuan  
Program Chair

# ICIA 2025 Organization Committees

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## **Secretariat:**

YAN Tingcui, SUSTech



# General Information

## Conference Venue

Crowne Plaza Lanzhou.

No.1 Beibinhe Road East, Chengguan District, Lanzhou, Gansu, China, 730046

兰州皇冠假日酒店

中国甘肃省兰州市城关区北滨河东路 1 号 邮政编码 730046

Tel: +86 (0755) 8801-5894

Web: <https://lanzhou.crownehotel.cn>

## Language

The conference and all its activities will be conducted in English.

## Conference Secretariat

YAN Tingcui

Contact E-mail: [yantc@mail.sustech.edu.cn](mailto:yantc@mail.sustech.edu.cn)

Contact Tel: +86 (0755) 8801-5894

## Dietary Needs

Conference delegate or partner with special dietary needs etc. is invited to indicate his/her special dietary needs to the organizing committee at the Registration Desk.

## Conference Registration

Venue

Crowne Plaza Lanzhou, Lanzhou

Time

Thursday	Aug. 28, 2025	14:00-18:00
Friday	Aug. 29, 2025	09:00-18:00
Saturday	Aug. 30, 2025	08:00-12:00

## Banquet

Date: August 29, 2025      Time: 18:30-20:00      Venue: Grand Ballroom, 3rd floor

## Farewell Party

Date: August 30, 2025      Time: 12:00-14:00      Venue: Dining Hall, 1st floor

## **Oral Presentation and Additional Equipment**

Please note that each session room will be equipped with a projector, screen, laser pointer, and microphone. Laptop and/or desktop computers will be provided. General software presentation packages are preinstalled, such as Microsoft PowerPoint, Adobe Acrobat reader. If you plan to use specific software presenting packages other than stated above, you are required to bring your own computer and install them before your presentation. Please include your paper number in all correspondence. Each presentation is allocated 10 minutes including question and answer period.

# Lanzhou Travel Guide

Lanzhou, the capital of Gansu Province, is a historic crossroads of ancient Silk Road cultures and modern industrial growth. Straddling the Yellow River in northwest China, it sits 1,500 km west of Beijing at the convergence of Qinghai-Tibetan Plateau and Loess Highland landscapes. The city uniquely blends Han, Hui, Tibetan, and other ethnic influences into a vibrant melting pot. While not UNESCO-listed, its 1,400-year-old city walls and iconic Yellow River Bridge (built 1909) symbolize enduring heritage. For more information, you can visit <https://www.tourgansu.com/index#/>.

**Lanzhou Danxia Geological Park (兰州水墨丹霞地质公园)**, Situated primarily in Yongdeng County's Shuping and Koushui towns, with sections spanning Xigu and Gaolan counties, this geological marvel lies just 15 km northwest of Lanzhou City. Encompassing 400 km<sup>2</sup>, it ranks as China's largest Danxia landscape. Formed during the Cretaceous to Tertiary periods and sculpted by Himalayan tectonic shifts, its crimson sandstone formations reveal striking patterns shaped by 70 million years of erosion. Visitors traverse a 3.5-km elevated walkway, the Whispering Dunes Trail, and pass the Silk Road Gateway—all while witnessing red-rock valleys, spires, and cliffs. Renowned for its pristine preservation, ancient origins, proximity to urban centers, and profound cultural legacy, the area earned national AAAA-rated status in December 2023 and is celebrated for holding "Nine Ultimate Distinctions" among China's Danxia sites.



**Yellow River Building (黄河楼).** Dominating the Qilihe District riverfront as Lanzhou's iconic cultural landmark, the 93.39-meter Yellow River Tower is a monumental tribute to China's "Mother River." Designed as a seven-tiered pagoda rising 16 floors – its symbolic "seven visible, six hidden" tiers reflecting profound cultural cosmology – the structure stands upon a fortress-inspired granite base evoking ancient city walls. Within its 51,685 m<sup>2</sup> complex, discover immersive exhibitions tracing 5,000 years of Yellow River civilization: admire replicas of Bronze Age Majiayao pottery, Qing-dynasty waterwheel schematics, and carved murals of Silk Road figures like explorer Zhang Qian. The observation decks (floors 12-15) deliver unparalleled panoramas of the Yellow River's "First Bend" through Lanzhou Basin. The tower actively breathes life into heritage through daily intangible-cultural demonstrations: try your hand at Lanzhou clay-figurine molding or watch Hui minority tea ceremonies.



**Lanzhou Old Street (兰州老街).** Nestled in Qilihe District's modern financial hub, this open-air cultural-commerce complex masterfully fuses Ming-dynasty architectural elegance with 21st-century urban energy. Just steps from Metro Line 1's Ma Tan Station, its 800-meter labyrinth of low-rise courtyards hosts avant-garde boutiques alongside living heritage pavilions where Gansu's 544 intangible cultural treasures – from Lanzhou paper-cutting to Hui silver filigree – breathe new life through daily artisan demonstrations. By day, browse Loess Plateau honey wines and Tibetan thangka replicas; by night, join locals at Z-generation speakeasies like Silk Road Remix or dine beneath replica palace lanterns at Michelin-recognized Gansu Belly.



# Transportation Information

The hotel is conveniently located next to the Gansu Grand Theater, near the Gansu International Convention and Exhibition Center and the Yellow River.

- 5.8 km from Lanzhou Railway Station;
- 6.3 km from Lanzhou Bus Station;
- 9.9 km from Lanzhou West Railway Station;
- 69 km from Lanzhou Airport.

## Location of the Hotel



# Program Schedule

## **Thursday, August 28, 2025**

14:00-18:00      Registration (Look for location information in the hotel lobby)

## **Friday, August 29, 2025**

08:30-08:40      Welcome Ceremony

08:40-09:20      Plenary Session I, Grand Ballroom, 3rd Floor, Chair: Jason Gu

09:20-10:00      Plenary Session II, Grand Ballroom, 3rd Floor, Chair: Jason Gu

10:00-10:20      Coffee Break

10:20-11:00      Plenary Session III, Grand Ballroom, 3rd Floor, Chair: Yixuan Yuan

11:00-11:40      Plenary Session IV, Grand Ballroom, 3rd Floor, Chair: Yixuan Yuan

12:00-14:00      Lunch at restaurant on the 1st floor

14:00-15:40      FP1-1 (Room 2, 3rd Floor) and FP1-2 (Room 3, 3rd Floor)

15:40-16:00      Coffee Break

16:00-17:40      FE2-1 (Room 2, 3rd Floor) and FE2-2 (Room 3, 3rd Floor)

18:00-20:30      Banquet (Grand Ballroom, 3rd Floor)

## **Saturday, August 30, 2025**

08:00-09:40      SA1-1 (Room 2, 3rd Floor) and SA1-2 (Room 3, 3rd Floor)

09:40-10:00      Coffee Break

10:00-11:40      SA2-1 (Room 2, 3rd Floor) and SA2-2 (Room 3, 3rd Floor)

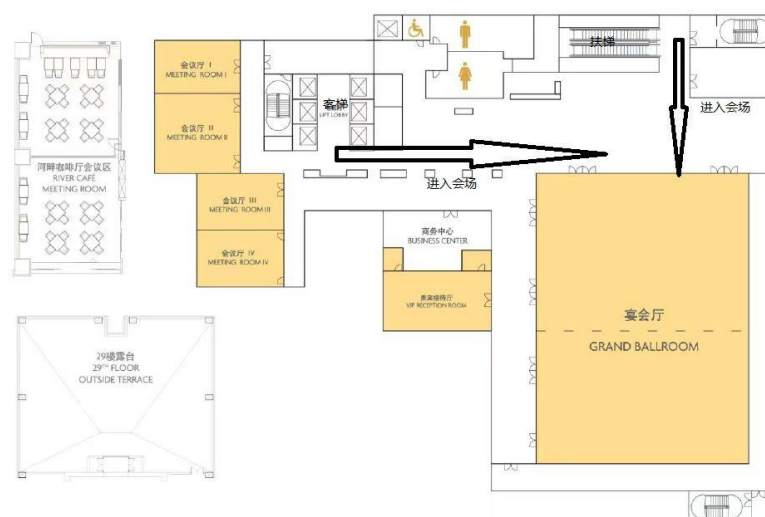
12:00-14:00      Lunch and Farewell Party

# Floor Plan of Meeting Rooms

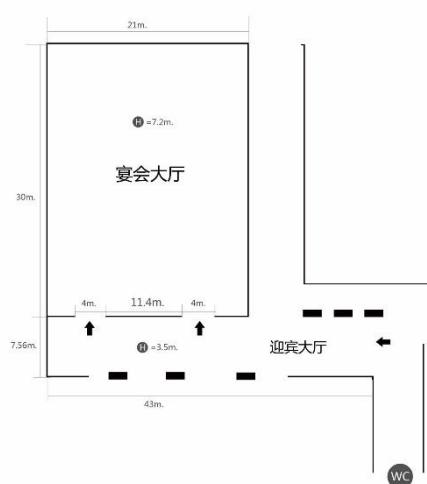
Plenary Talk will be held at Grand Ballroom on the 3rd Floor.

All oral sessions will be held at Meeting Room 2 & 3 on the 3rd floor.

三楼宴会厅平面图



皇冠假日三楼宴会大厅平面图



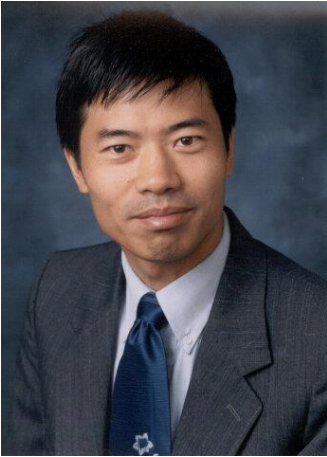
Third Floor (Level 3)



# Plenary Session I

8:40-9:20, Friday, August 29

Grand Ballroom (3rd Floor)



## **Professor ZHOU MengChu**

New Jersey Institute of Technology, USA

MengChu Zhou received his B.S. degree in Control Engineering from Nanjing University of Science and Technology, Nanjing, China in 1983, M.S. degree in Automatic Control from Beijing Institute of Technology, Beijing, China in 1986, and Ph. D. degree in Computer and Systems Engineering from Rensselaer Polytechnic Institute, Troy, NY in 1990. He joined the Department of Electrical and Computer Engineering, New Jersey Institute of Technology in 1990, and is now a Distinguished Professor. His interests are in intelligent systems, robotics, Petri nets, Internet of Things, machine learning, and big data analytics. He has over 1300 publications including 17 books, over 900 journal papers including

over 700 IEEE Transactions papers, 31 patents and 32 book-chapters. He is presently Senior Editor of IEEE Transactions on Intelligent Transportation Systems, and Associate Editor of Research, IEEE Internet of Things Journal, and Frontiers of Information Technology & Electronic Engineering. He is a recipient of Excellence in Research Prize and Medal from NJIT, Humboldt Research Award for US Senior Scientists from Alexander von Humboldt Foundation, and Franklin V. Taylor Memorial Award and the Norbert Wiener Award from IEEE Systems, Man, and Cybernetics Society, and Edison Patent Award from the Research & Development Council of New Jersey. His work has received over 78800 GoogleScholar citations with h-index being 141. He is Fellow of IEEE, International Federation of Automatic Control (IFAC), American Association for the Advancement of Science (AAAS), Chinese Association of Automation (CAA) and National Academy of Inventors (NAI).

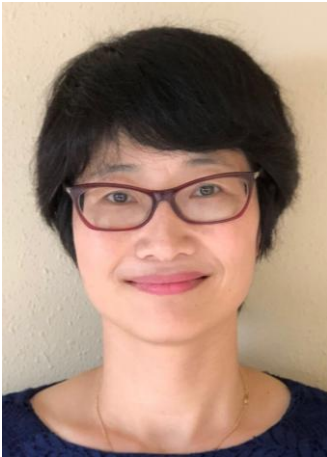
## **Joint Optimization Approach to Multi-UAV-Assisted Large-Scale Mobile Edge Computing**

**Abstract:** This talk introduces how multiple unmanned aerial vehicles (UAVs) assist IoT devices in an edge computing system in accomplishing their tasks in an energy-efficient manner. UAVs serve these devices as edge servers, and fly to footholds to collect task data from the latter, execute tasks locally and return results to the latter. The optimization goal is to minimize overall energy consumption by jointly optimizing 1) association between each UAV and ground-based IoT devices, 2) deployments of UAVs, and 3) flight trajectories of UAVs. To achieve this, this talk proposes a Joint Optimization Approach (JOA) for the association between each UAV and ground-based IoT devices, deployment of UAVs, and UAV flight trajectories. It is verified on ten large-scale instances, and the results demonstrate its effectiveness in achieving minimal energy consumption, well outperforming the state-of-the-art methods. As a result, this research makes UAV-assisted large-scale mobile edge computing systems closer to its real applications to advance low-altitude space economic development.

# Plenary Session II

9:20-10:00, Friday, August 29

Grand Ballroom (3rd Floor)



## Professor TAN Ying

University of Melbourne, Australia

Dr. Ying Tan is a Professor in Mechanical Engineering at The University of Melbourne, Australia. She earned her bachelor's degree from Tianjin University, China, in 1995, and her PhD from the National University of Singapore in 2002. After a postdoctoral fellowship at McMaster University, she joined The University of Melbourne in 2004. Dr. Tan has received prestigious recognitions, including an Australian Postdoctoral Fellowship (2006-2008) and an ARC Future Fellowship (2009-2013). Currently, she serves on the ARC College of Experts (2024-2026) and holds several distinguished titles, including Fellow of IEEE (FIEEE), Engineers Australia (FIEAust), and the Asia-Pacific Artificial Intelligence Association.

She is also a member of the IEEE Fellow Committee (2024-2025). Her research spans intelligent systems, nonlinear systems, data-driven optimization, rehabilitation robotics, human motor learning, wearable sensors, and model-guided machine learning.

## Learning Control and Its Application in Rehabilitation Robotics

**Abstract:** Rehabilitation robotics leverages the principle of "practice makes perfect" by using repetitive task-based exercises to facilitate motor re-learning and functional recovery, particularly in poststroke rehabilitation. Rooted in neurocognitive rehabilitation theories, robot-assisted therapies provide tailored, intensive training routines that meet individual patient needs. Learning control (LC) strategies, originally developed in 1978 to achieve high tracking performance in industrial applications, offer a compelling framework for controller designs in this field. Unlike traditional control methods, LC algorithms improve performance over time by utilizing information from previous iterations. This talk highlights recent advances in LC designs and illustrates how various LC algorithms effectively address the unique challenges posed by rehabilitation robotics. Additionally, it explores future opportunities for integrating learning control into rehabilitation systems and outlines key research questions for advancing control theory in this critical area.

# Plenary Session III

10:20-11:00, Friday, August 29

Grand Ballroom (3rd Floor)



## **Professor ZHANG Jianwei**

University of Hamburg, Germany

Jianwei Zhang is a Professor and Director of the Institute of Technical Aspects of Multimodal Systems (TAMS), Department of Informatics at the University of Hamburg. He is a member of the German Academy of Science and Engineering and an International Member of the Chinese Academy of Engineering. He received both his Bachelor of Engineering (1986, with distinction) and Master of Engineering (1989) from the Department of Computer Science at Tsinghua University, Beijing, China, and his PhD (1994) from the Institute of Real-Time Computer Systems and Robotics at the University of Karlsruhe, Germany. His research interests include multimodal information processing (visual, auditory, tactile, etc.), multimodal computational models, cognitive sensor fusion for robot perception, robot learning architecture, dexterous manipulation, bi-manual robot assembly of 3D aggregates, etc. He has published over 600 papers and books, and has received multiple best paper awards. He served as the General Chair of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) in Hamburg in 2015, etc.

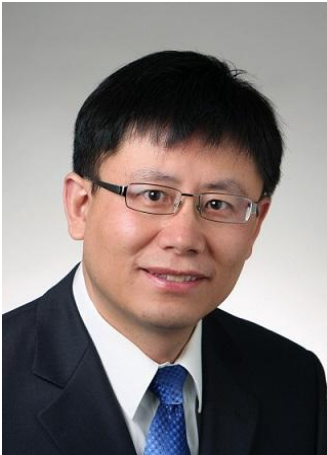
## **Synergy of Data-Driven and Model-based Methodologies enhancing Robotic General Skills**

**Abstract:** Traditional modular model-based approaches in robotics primarily rely on manual programming and analytical models with hand-crafted rules for action planning and execution. While functional for specific tasks, these methods limit the dexterity and adaptability of robots in complex, open-ended environments. The emergence of embodied AI marks a rapid advancement in developing general-purpose robotic manipulation. Large multimodal models (LMMs) facilitate action planning by combining bottom-up skills, enabling robots to generate versatile and effective task sequences based on elementary skills. In this talk, I will introduce foundational concepts inspired by cognitive systems that allow robots to better comprehend multimodal scenarios by integrating knowledge and learning. Next, I will also explore how LMMs learning techniques can be integrated into intelligent robotic systems. Finally, I will outline the key modules required to elevate a robot's intelligence and adaptability and a hybrid architecture provides a balanced approach, avoiding the challenges of purely end-to-end training while enhancing physical interpretability. In parallel, I will showcase robotic platforms demonstrating capabilities in dexterous manipulation and robust dynamic locomotion, emphasizing their potential for general human-service applications to benefit humanity.

# Plenary Session IV

11:00-11:40, Friday, August 29

Grand Ballroom (3rd Floor)



## **Professor LIU Peter X.**

Carleton University, Canada

Prof. Peter Xiaoping Liu received his Ph.D. degree from University of Alberta, Canada in 2002. He has been with the Department of Systems and Computer Engineering, Carleton University, Canada since July 2002 and is currently a professor. His research interest includes teleoperation, haptics, surgical simulation, control and intelligent robotic systems. Dr. Liu is the leading Founding Chair of IEEE SMC Technical Committee on Interactive and Wearable Computing and Devices. He is the Editor in Chief of International Journal of Robotics and Automation and has served as an Associate Editor of several journals including IEEE/CAA Journal of Automatica Sinica, IEEE/ASME Transactions on Mechatronics, IEEE Transactions on Cybernetics, IEEE Transactions on Automation Science and Engineering, and IEEE Transactions on Instrumentation and Measurement. Dr. Liu is a Fellow of Canadian Academy of Engineering (FCAE), a Fellow of Engineering Institute of Canada (FEIC), and a Fellow of Institute of Electrical and Electronics Engineers (FIEEE).

## **Towards Stable and Realistic Haptic Interaction**

**Abstract:** Haptics technology allows humans to touch, feel and manipulate an object physically over distance, in virtual environment, or in micro/nano-world. While it has shown huge potentials in numerous domains, the two fundamental problems (i.e, stability and transparency) of haptic interaction are still open in practical settings. There are many unsolved or not well solved issues, from interfacing devices, system configurations to practical applications. This talk will discuss how to enable highly realistic and stable haptic interaction between the user and the manipulated object, particularly in medical surgery.

# Symbols for Technical Sessions

## Symbols for Days of a Week

T = Thursday  
F = Friday  
S = Saturday

## Symbols for Session Times Slots

Session A = 08:00-12:00

Session P = 14:00-16:00

Session E = 16:00-18:20

## Symbols for Room Assignments

Room ID	Room
Room 2	Meeting Room 2, 3rd floor
Room 3	Meeting Room 3, 3rd floor

# Oral Sessions Information

Award Session (FP1-1), Room 2, August 29, 2025

Session Chair: Yao Shilong; Yu Jingwen

ID	Time	Title and Authors
58	14:00-14:10	<b>Model-Based Control for Hybrid Magnetic Actuation System</b> <i>Fang, Enjie*; Wang, Tiantian; Wang, Jiaole; Song, Shuang</i>
60	14:10-14:20	<b>Uncertainty-Guided Incremental Interactive Image Matting with Variational Gaussian Processes</b> <i>Guo, Bingjie; Huang, Wenhui*</i>
87	14:20-14:30	<b>Lightweight Detection Algorithm for SOP Chip Pin Defect Using Enhanced YOLOv8</b> <i>Lin, Dongmei*; Zhao, Xudong; Fan, Yujie; Yang, Fulong; Chen, Xiaolei</i>
92	14:30-14:40	<b>LIV-GSS: LiDAR-Inertial-Visual SLAM with 3D Gaussian Splatting</b> <i>Ren, Bin; Wang, Yinchuan; Zhang, Xiang; Xiao, Leibing; Wang, Yachao; Liu, Yue; Sun, Xiaobin; Wang, Chaoqun*</i>
100	14:40-14:50	<b>Adaptive Finite-time State-feedback Control for Stochastic Nonlinear Systems with Unknown Covariance Noise</b> <i>Min, Huifang*; Shi, Shang</i>
104	14:50-15:00	<b>PPCHead: A Lightweight Detection Head Designed for UAV Scenarios</b> <i>Qu, Zenghui; Kong, Weigang; Jia, Meng; Xu, Zhenhua; Wang, Ruipeng; Liu, Haiying*</i>
122	15:00-15:10	<b>Expansive Space Trees with Reality Warping Actions for Simultaneous Design and Kinodynamic Motion Planning</b> <i>Li, Pusong*; Nagi, Rakesh</i>
127	15:10-15:20	<b>RND for Multi-Task Execution of Redundant Robots With Task Priorities</b> <i>Xie, Zhengtai; Chen, Wei; Li, Erchao; Jin, Long*</i>
130	15:20-15:30	<b>Efficient and Progressive Multi-Task Reinforcement Learning for Fault-Tolerant Hexapod Locomotion</b> <i>Huang, Shichang; Zheng, Minhua*; Peng, Zhe</i>
138	15:30-15:40	<b>A VLM Framework for Crack Segmentation and Description with Hierarchical Switching Mechanism</b> <i>Li, Aohan; Ma, Shuo; Li, Teng*; Pan, Yuxin</i>

# Regular Session (FP1-2), Room 3, August 29, 2025

## Session Chair: Wang Pengyu, Wang Tao

ID	Time	Title and Authors
4	14:00-14:10	<b>A Novel Capsule Endoscopy Robot for Gastric Sampling</b> <i>Wang, Guokai*; Yu, Xinkai; Song, Shuang</i>
32	14:10-14:20	<b>Robust Contactless Detection of Respiration and Heart Rate using Millimeter-Wave Radar during Continuous Body Movement</b> <i>Wang, Tianyi*</i>
35	14:20-14:30	<b>Boosting Zero-Shot Semantic Segmentation Performance on Unseen Categories with Key and Value Selection (KVS)</b> <i>Zhang, Yong*; Li, Mengze; Zheng, Yuhua; Li, Yuehua; Ren, Hongliang; Gu, Jianjun</i>
38	14:30-14:40	<b>Exploring Virtual Reality Motion Sickness through EEG with an Attention-Based Explainable Graph Neural Network</b> <i>Feng, Naishi*; Zhao, Ziqi; Hua, Chengcheng; Zhao, Hongwei</i>
41	14:40-14:50	<b>CLAM: Collaborative LiDAR-IMU Mapping with Loop Closure for Multi-Robot Teams</b> <i>Liu, Shuseng; Zhang, Xiang; Dong, Yangshuo; Zhang, Guoteng; Wang, Chaoqun; Song, Rui*</i>
54	14:50-15:00	<b>A Deep Learning-Integrated Visual Servoing Framework for Charging Port Alignment</b> <i>Luo, Jian; Zhan, Hong; Zeng, Chao*; Yang, Chenguang</i>
59	15:00-15:10	<b>The Impact of Visual Fidelity of Embodied Conversational Agents on Health Education</b> <i>Li, Chanyuan; Chen, Xinzhi; Wang, Xueyang*</i>
61	15:10-15:20	<b>Adaptive Formation Switching and MPC-Based Follower Control for Multi-Robot Navigation in Narrow Passages</b> <i>Dong, Yangshuo; Zhou, Yingtao; Gao, Song; Wang, Changshun; Zhang, Guoteng; Song, Rui*</i>
62	15:20-15:30	<b>Multi-View Command Action Recognition Based on Skeleton Trajectory Extraction and Enhanced Graph Convolutional Network in Human-Robot Formation</b> <i>Chen, Meiyi; Chai, Hui*; Zhang, Qin; Song, Rui; Xu, Peng; Wen, Jianchang</i>
69	15:30-15:40	<b>Maximum Correntropy-Based UKF in IMM Framework for Nonlinear Non-Gaussian Systems</b> <i>Shou, Menghan; Zhou, Tangfa; Yang, Xusheng*</i>



Regular Session (FE2-1), Room 2, August 29, 2025  
Session Chair: Yao Shilong, Yu Jingwen

ID	Time	Title and Authors
139	16:00-16:10	<b>Region-based Initialization and Spatial-constrained Loop Closure Detection for Efficient Visual-inertial SLAM</b> <i>Lin, Shuyue; Sun, Yuxiang*</i>
158	16:10-16:20	<b>Pressure-Observer-Based Robust Control of Underwater Electro-hydrostatic Actuator</b> <i>Chen, Yang; Liu, Jiajia; Lyu, Litong; Nie, Yong; Mei, Deqing; Chen, Zheng*</i>
171	16:20-16:30	<b>A RRT based Path and Gait Planning Framework for Humanoid Robots in 3D Complex Environment</b> <i>Miao, Shiyu*; Yu, Jiajie; Chi, Wenzheng; Sun, Lining</i>
174	16:30-16:40	<b>UText: Prompt-Guided Semantic Distillation for Medical Image Segmentation</b> <i>Xie, Chenshu; Lu, Yushan; Wang, Fufang; Qi, Tienan; Zhao, Zhongwei; Yu, Nengwang; Jia, Xiao*</i>
178	16:40-16:50	<b>Test-Time Learning for Inter-Subject Generalization in SSVEP-Based BCI</b> <i>Duan, ShengBin; Xiang, TianYu; Zhou, XiaoHu*</i>
70	16:50-17:00	<b>Integrated Motion-Force-Impedance Regulation of Flexible Joint Robots via Hierarchical Adaptive Robust Control</b> <i>Lin, Yinjie*; Yang, Xiao; Hu, Jinfei; Zhang, Wencong; Chen, Zheng</i>
75	17:00-17:10	<b>Research on a Multi-Feature 1D-CNN-Based Composite Fault Diagnosis Method for Gearboxes</b> <i>Wang, Yanlong; Wang, Antao*; Kong, Fanbin</i>
76	17:10-17:20	<b>Stereo Vision-Based Obstacle Detection for Autonomous Agricultural Machinery</b> <i>Wang, Wenhao*; Zhao, Hongli; Wang, Ping</i>
77	17:20-17:30	<b>DNN-Boosted Origami 3-DoF Parallel for Ultra-Precise Heave-Tilt Motion</b> <i>Shi, Gaokun*; Nigatu, Hassen; Zheng, Zhen; Huang, Yongsheng; Zhu, Ke</i>
81	17:30-17:40	<b>A Real-Time Magnetic Positioning Algorithm Based on Simulated Annealing Algorithm</b> <i>Ly, Bowen*; Lin, Haijun</i>
68	17:40-17:50	<b>A Coverage Planning Framework For UAV-USV Collaboration in Nearshore Areas</b> <i>Wang, Pengyu*; Yu, Jingwen; Zhang, Hong; Meng, Max Q.-H.</i>

# Regular Session (FE2-2), Room 3, August 29, 2025

## Session Chair: Wang Pengyu, Wang Tao

ID	Time	Title and Authors
86	16:00-16:10	<b>Design and Experimental Study of a Vectorable Rotor System</b> <i>Mei, Lingrun*; Li, Yanjie; Zhang, Guangyu; He, Yuqing</i>
88	16:10-16:20	<b>A cuff-less blood pressure waveform measurement method based on CNN-LSTM-Attention model</b> <i>Lin, Dongmei; Pu, Shaojie*; Yang, Lusheng; Wang, Zheng; Zhang, Aihua</i>
91	16:20-16:30	<b>SAM-Assisted Ultrasound 3D Reconstruction Using Synthetic Data from CT Images</b> <i>Gao, Xuchun; Xu, Yawen; Zhou, Ying; Huang, Mengyao; Lei, Long; Zhang, Peng; Zhao, Baoliang*; Hu, Ying</i>
83	16:30-16:40	<b>A Comparative Study of Generative and Diffusion Models for Specular Reflection Removal in Endoscopic Videos</b> <i>Cai, Yunqi*; Wang, An; Zhou, Rulin; Bai, Long; Lai, Jiewen; Ren, Hongliang</i>
95	16:40-16:50	<b>Design and Development of Modular Reconfigurable Multi-Wheel-legged Robots</b> <i>Li, Ruijiao*; Shang, Huiliang</i>
96	16:50-17:00	<b>A Lightweight Cascaded Load Disaggregation Model Considering Device and Temporal Features</b> <i>Yang, Jie*</i>
97	17:00-17:10	<b>Recognizing Lower Limb Motion Intention through the Fusion of Multimodal sEMG and VMG Signals</b> <i>Liu, Shucun*; Wang, Can</i>
98	17:10-17:20	<b>A Dual-Mode Flapping-Wing Robot Capable of Water-Surface Sliding and Take-Off</b> <i>Qiu, Yang; Yan, Jihong*</i>
99	17:20-17:30	<b>Neural Network-Based Magnetic Positioning System for a Three-Degree-of-Freedom Platform</b> <i>Zhu, Junjie; Dong, Qizhao; Li, Guangwei; Sun, Huashu; Xu, Shilei*</i>
101	17:30-17:40	<b>Controlled Diffusion Models for Image Inpainting</b> <i>Meng, Jiahao*; Shi, Changhong ; Li, Zhijun</i>
102	17:40-17:50	<b>CEUS-MSSDM: A Multi-Stage Self-Supervised Diffusion Model for Thyroid CEUS Denoising</b> <i>Zhang, Hansen; Li, Zelan*; Chi, Jianning</i>

Regular Session (SA1-1), Room 2, August 30, 2025  
Session Chair: Yao Shilong, Bai Long

ID	Time	Title and Authors
103	8:00-8:10	<b>PPG signal estimation method based on improved GRU encoder-decoder architecture</b> <i>Lin, Dongmei*; Kou, Defeng; Wu, Yafeng</i>
105	8:10-8:20	<b>Pseudo Forward Depth Estimation for Imaging Sonar Using Diffusion Models</b> <i>Zhang, Zhengyan; Hu, Haochen; Wang, Bing*; Lin, Jinghua; Li, Jiamin; Liu, Meimei; Wen, Chihyung</i>
106	8:20-8:30	<b>A PSO-Based TOA–FOA Fusion Method for TDMA Acoustic Localization</b> <i>Zhou, Jingyi; Wu, Kunyu*; Zhao, Qiushi; Zhang, Lei; Qin, Hao</i>
113	8:30-8:40	<b>Multi-Drone Collaborative Target Recognition Based on Visual Association</b> <i>Wang, Ruoxi*; Zhang, Xuanyi; Zhu, Yu</i>
114	8:40-8:50	<b>An Efficient Obstacle-Aware Pollination Robot System</b> <i>Wang, Jinhua*</i>
115	8:50-9:00	<b>A Hybrid-Visual Algorithm for Few-Shot Micro-Motor Winding Defect Detection</b> <i>Si, Kaixin; Cao, Guang-Zhong*; Lei, Yu; Liang, Deliang</i>
116	9:00-9:10	<b>Liver Disease Classification in Ultrasound Image with Vision-Language Pretraining</b> <i>Zhang, Tao; Li, Chenyang; Zhao, Baoliang*; Yao, Liang; Zhang, Peng; Li, Bing; Hu, Ying</i>
118	9:10-9:20	<b>Robust Wheel-legged Biped Robot Control on Semi-structured Terrains</b> <i>Lan, Bowen*; Huang, Hailong</i>
119	9:20-9:30	<b>Adversarial 3D Generation Based on Diffusion Models for Anti-Facial Recognition</b> <i>Yang, Shi Yi*; Zhu, Boying; Yan, Zhixin</i>
120	9:30-9:40	<b>A Novel Robot Gripper with Scott Linkage for Scooping and Self-Adaptive Grasp in Environmental Constraints</b> <i>Qu, Shijie; Zhang, Wenzeng*</i>
121	9:40-9:50	<b>COT-Distillation: Transferring Spatial Reasoning Capabilities into Smaller Language Models</b> <i>Li, Gege; Zheng, Minhua*; Hu, Zhongyu; Wang, Zengshuai</i>

# Regular Session (SA1-2), Room 3, August 30, 2025

## Session Chair: Wang Pengyu, Yu Jingwen

ID	Time	Title and Authors
124	8:00-8:10	<b>Leveraging Multi-Channel Image Representations to Enhance Robustness in Tabular Data Classification</b> <i>Wang, Zengshuai; Liu, Peter Xiaoping; Zheng, Minhua*</i>
125	8:10-8:20	<b>Model Set Optimization Based Multipie Model Adaptive Control for FGD</b> <i>Wang, Chunbo*; Li, Xiaoli; Wang, Kang</i>
145	8:20-8:30	<b>Embedded Flexible Circumferential Sensing for Real-Time Intraoperative Environmental Perception in Continuum Robots</b> <i>Luo, Peiyu*</i>
132	8:30-8:40	<b>Dual Time Scale Prescribed-Performance Tracking Control Strategy for Underactuated Surface Vessels Based on Singular Perturbations</b> <i>Bao, Duanhua; Xu, Yujie*; Wang, Yan; Dong, LiJing; Fu, Mingyu</i>
134	8:40-8:50	<b>ASC-USID: Axial Spatial Coordinate-based Object Detection in Underwater Sonar Images</b> <i>Shi, Yuhao; Li, Zongyuan; Yin, Feihu*</i>
137	8:50-9:00	<b>NeuroABench: A Multimodal Evaluation Benchmark for Neurosurgical Anatomy Identification</b> <i>Song, Ziyang; Zang, Zelin; Ye, Xiaofan; Bai, Long; Xu, Boqiang; Wu, Jinlin*; Ren, Hongliang; Liu, Hongbin; Luo, Jiebo; Lei, Zhen</i>
140	9:00-9:10	<b>Geo-RepNet: Geometry-Aware Representation Learning for Surgical Phase Recognition in Endoscopic Submucosal Dissection</b> <i>Tang, Rui*; Yin, Haochen; Wang, Guankun; Bai, Long; Wang, An; Gao, Huxin; Wang, Jiazheng; Ren, Hongliang</i>
143	9:10-9:20	<b>Sliding Mode Control of Robotic Manipulators with a Fixed-Time Disturbance Observer</b> <i>Su, Wenbin; Wang, Qingcheng; Wang, Jiangqiao; Zhang, Haochen; Liu, Chaorong *</i>
144	9:20-9:30	<b>Research on Composite Adaptive Learning Impedance Control of Robots in Magnetic Field Environments</b> <i>Cheng, Wang; Su, Wenbin; Jiao, Jiayi; Zhu, Xiang; Liu, Weirong*</i>
146	9:30-9:40	<b>Blended Control Latent Diffusion Model for Text-Guided Image Inpainting</b> <i>Yi, Jiajing; Wu, You; Wang, Hewei; Zhang, Haoyang; Liu, Jie*</i>
147	9:40-9:50	<b>Learning-Based 3D Trajectory Generation for Automated Nasal Endoscopy</b> <i>Peng, Yanting*; Wang, Tiantian; Liu, Tangyou; Song, Shuang; Wang, Jiaole</i>

# Regular Session (SA2-1), Room 2, August 30, 2025

## Session Chair: Yao Shilong, Bai Long

ID	Time	Title and Authors
148	10:00-10:10	<b>A pulse wave and heart rate detection system based on an embedded platform</b> <i>Zhang, Qi; Li, Zhichen*; Zhang, Zhenyin; Wu, Huayu; Pan, Hongwei; Liang, Chenglin</i>
152	10:10-10:20	<b>Automatic Charging System for EVs: Mechanical Design, Vision-Based Positioning and Force-Servo Plugging</b> <i>Hu, Anjun*; Ban, Shu; Meng, Lingxiao; Wang, Jiankun; Meng, Max Q.-H.</i>
156	10:20-10:30	<b>A cascaded force/position hybrid control method based on ultrasound robots</b> <i>Chen, Guoan*; Wang, Yongxuan; Su, Hang; Liu, Rong</i>
157	10:30-10:40	<b>AI-powered Non-contact Emotion Recognition: Recent progress, Advances, and Future prospects</b> <i>Jin, Qing; Qi, Lin*</i>
160	10:40-10:50	<b>Advanced Multi-Target Navigation Using ADD-RRVS with Double Q-Learning</b> <i>Dela Cruz, Luicito Jr; Lei, Tingjun; Luo, Chaomin*; Bi, Zhuming; Jan, Gene Eu</i>
161	10:50-11:00	<b>Deformable Adaptation and Dual-view Interaction Network for Homography Estimation</b> <i>Li, Tianming*; Zhou, Zhen; Zhu, Qing; Luo, Jianqiao; Wang, Yaonan</i>
164	11:00-11:10	<b>Attention-based multi-branch multi-level salient object detection network for 360°panoramic images</b> <i>Chen, Xiaolei*; Zhang, Pengcheng; Ma, Pingchuan</i>
166	11:10-11:20	<b>PID Anti-Interference Control of Quadrotor UAV Based on Linear Observer</b> <i>Qiu, Liuyue*; Gu, Zehong; Jia, Xinyi; Jia, Jie; Luo, Jiawei; Han, Yanhua; Liu, Yanbin</i>
173	11:20-11:30	<b>STRIM-Net: Sequential Temporal Recalibration for Inertial Modeling</b> <i>Jiao, Shijia; Wang, Xinyi; Shi, Wei; Zhong, Ji*; Gao, Meizhou; Song, Rui; Wang, Chaoqun</i>
176	11:30-11:40	<b>A Novel Finite Element Method Based Model for Estimating Multi-Needle-Tissue Interactions in Large Tumor Ablation Application</b> <i>Li, Murong*</i>
177	11:40-11:50	<b>A Haar Wavelet Down-sampling Linear Deformable ConvFormer for Radar-based Human Indoor Activity Recognition</b> <i>Li, Murong*</i>

# Regular Session (SA2-2), Room 3, August 30, 2025

## Session Chair: Wang Pengyu, Yu Jingwen

ID	Time	Title and Authors
66	10:00-10:10	<b>Design and Control of a Dual-arm Tendon-driven Continuum Robot System for Laryngeal Surgery</b> <i>Zhao, Sihan*</i> ; Tao, Rui; Ma, Yunkai; Fu, Yichen; Jing, Fengshui; Qin, Yong; Cong, Tiechuan; Wen, Feng; Wang, Li
67	10:10-10:20	<b>Benchmarking Few-Shot Anomaly Detection in Image Classification with Low-Rank Adaptation</b> <i>Ren, Hongliang*</i> ; Wang, An
93	10:20-10:30	<b>HKM-surg: A Hierarchical Knowledge-Guided Multimodal Surgical Instruction Tuning Method for Fine-Grained Surgical Action Prediction</b> <i>Li, Ling*</i> ; Deng, Zuxing; Chen, Jingcheng; Li, Xiaojian; Wang, Qingyun
108	10:30-10:40	<b>Multi-Modal Attention Iterative Network for Incisor Median Sagittal Plane Localization</b> <i>Kong, Detian*</i> ; Li, Ang; Miao, Juzheng; Yuan, Yixuan; Meng, Max Q.-H
110	10:40-10:50	<b>Optimizing Scenario-Based Testing in ADS: Parameter Selection and Sensitivity Analysis Based Parameter Elimination</b> <i>Zengin, Namik*</i> ; Derebaşı, Oğuzhan; Temiz, Ömer Faruk
129	10:50-11:00	<b>Development and experiment of a new velocity prediction method for sailing robot</b> <i>Zhang, Zhaozhao; Wang, Tao*</i> ; Zhang, Yu; Liu, Shuo
131	11:00-11:10	<b>An Underactuated Gripper Integrating Grasshopper-Inspired Linkages and Delay Triggering for Pinching and Adaptive Grasping</b> <i>Ding, Haokai*</i> ; Chen, Yizhe; Jia, Dongjun; Zhang, Wenzeng
150	11:10-11:20	<b>Joint Compression Based on Tensor Ring Decomposition and Structured Pruning</b> <i>Liu, Pengfei; Li, Zhijun; Ma, Yihao; Wu, Yanming; Liu, Weirong*</i>
151	11:20-11:30	<b>Endo-HBC: A Three-Tier Hierarchical Bleeding Classification Dataset for Safety-Critical Hemostasis in Endoscopic Submucosal Dissection</b> <i>Xu, Mengya*</i> ; Yan, Yuqi; Lyu, Chaoyang; Li, Zhen; Ren, Hongliang
154	11:30-11:40	<b>A Modular Kinetostatic External Force and Shape Prediction System Towards Tendon-Driven Continuum Robots</b> <i>Yao, Shilong*</i>

# ICIA 2025 Program at a Glance

Thursday, August 28, 2025		
14:00-18:00	Registration (Look for location information in the hotel lobby)	
Friday, August 29, 2025		
08:30-08:40	Welcome Ceremony	
08:40-09:20	Plenary Session I Joint Optimization Approach to Multi-UAV-Assisted Large-Scale Mobile Edge Computing Prof. ZHOU Mengchu, New Jersey Institute of Technology, USA	
9:20-10:00	Plenary Session II Learning Control and Its Application in Rehabilitation Robotics Prof. TAN Ying, University of Melbourne, Australia	
10:00-10:20	Tea and Coffee Break	
10:20-11:00	Plenary Session III Synergy of Data-Driven and Model-based Methodologies enhancing Robotic General Skills Prof. ZHANG Jianwei, Hamburg University, Germany	
11:00-11:40	Plenary Session IV Towards Stable and Realistic Haptic Interaction Prof. LIU Peter X., Carleton University, Canada	
12:00-14:00	Lunch at Restaurant	
Time \ Room	Room 2, Third Floor	Room 3, Third Floor
14:00-15:40	Award Session FP1-1	Regular Session FP1-2
15:40-16:00	Tea and Coffee Break	
16:00-17:40	Regular Session FE2-1	Regular Session FE2-2
18:00-20:30	Banquet (Grand Ball Room, Third Floor)	
Saturday, August 30, 2025		
Time \ Room	Room 2, Third Floor	Room 3, Third Floor
08:00-09:40	Regular Session SA1-1	Regular Session SA1-2
09:40-10:00	Tea and Coffee Break	
10:00-11:40	Regular Session SA2-1	Regular Session SA2-2
12:00-14:00	Lunch and Farewell Party	