The 8th International Conference on Industrial Artificial Intelligence (IAI 2026)

19-22 August, 2026, Shenyang, China



Conference Program

Table of Contents

Greetings from the General and Program Chairs 2

General Co-Chairs of IAI 5

International Program Committee 5

Instructions for Presenters & Session Chairs 43

Local Attractions 44

Sponsors 47

Technical Program 48

Author Index 66

Keyword Index 70

Greetings from the General and Program Chairs

It is our pleasure to welcome you to the 8th International Conference on Industrial Artificial Intelligence (IAI 2026) in Shenyang, China on behalf of the National Organizing Committee and International Program Committee.

IAI 2026 will bring together researchers and practitioners from the world to facilitate discussions of recent developments in bridging the gap between industrial automation and artificial intelligence. The program accommodates contributions from various application areas and methodologies.

The conference is divided into two stages: The International Forum on Frontiers of Automation and Intelligence (FAI, August 19-20) and The International Conference on Industrial Artificial Intelligence (IAI, August 21-22). The conference has invited over 40 internationally renowned experts and scholars from 12 countries and regions, including the United States, Canada, Mexico, the United Kingdom, Australia, and Japan.

The program consists of 24 oral sessions including 2 award sessions, 1 poster session, and 4 plenary lectures and 8 plenary panel discussions. The oral sessions are organized in six parallel tracks which will be held on August 21 and 22. Poster presentations will take place on the afternoon of August 21.

We feel very privileged and honored to have the following plenary lectures addressed by leading experts in the field:

1. Next-Generation AI and Robotics: Data Driven vs. Physics Model Driven & Their Symbiosis, Professor Yu Sun, University of Toronto, Canada, International Member of both the Chinese Academy of Engineering and the U.S. National Academy of Engineering, Fellow of the Royal Society of Canada

2. Informed Machine Learning: Emerging Opportunities and Industrial Perspectives, Professor Witold Pedrycz, University of Alberta, Canada, Fellow of the Royal Society of Canada.

3. Why LLM + Humanoid Robots Not Working Yet?, Professor Max Q.-H. Meng, Southern University of Science and Technology, Fellow of the Canadian Academy of Engineering.

4. Data-Driven Output-Feedback Control for Unknown Linear Systems: Stabilization and Output Regulation, Professor Jie Huang, The Chinese University of Hong Kong, China, International Member of the Chinese Academy of Engineering.

Moreover, we will host the following plenary panel sessions:

1. Panel 1: Enhancing Young Scholars' Academic Writing Skills and Journal Service Capabilities

   Panelists:

   - S. Joe Qin, Lingnan University, Hong Kong, China, Academician of the European Academy of Sciences and Arts
   - Peng Shi, University of Adelaide, Academician of the European Academy of Sciences, Editor-in-Chief of IEEE Transactions on Cybernetics
   - Xin Yao, Lingnan University, Hong Kong, China, Fellow of the Hong Kong Academy of Engineering Sciences, Former Editor-in-Chief of IEEE Transactions on Evolutionary Computation
   - Guoxiang Gu, Louisiana State University
   - Ling Shi, The Hong Kong University of Science and Technology

2. Panel 2: New Intersections Between Control Theory and Intelligent Theory in the Era of Artificial Intelligence

Panelists:

- Zhong-Ping Jiang, New York University, Academician of the European Academy of Sciences
- Derong Liu, Anhui University, Academician of the European Academy of Sciences
- Ye-hwa Chen, Georgia Institute of Technology
- Tingwen Huang, Shenzhen University of Advanced Technology
- Qichun Zhang, Buckinghamshire New University, UK

3. Panel 3: Frontier and Emerging Trends in Artificial Intelligence and Robotics—Part 1

Panelists:

- Max Q.-H. Meng, Southern University of Science and Technology, Fellow of the Canadian Academy of Engineering
- Simon X. Yang, University of Guelph, Fellow of the Canadian Academy of Engineering
- Mengjie Zhang, Victoria University of Wellington, Fellow of the Royal Society of New Zealand
- Qingguo Wang, Wuhan University of Science and Technology
- Zhibo Pang, Peking University

4. Panel 4: Frontier and Emerging Trends in Artificial Intelligence and Robotics—Part 2

Panelists:

- Ren C. Luo, Taiwan University, China, Former Editor-in-Chief of IEEE Transactions on Industrial Informatics
- Chun-Yi Su, Concordia University, Canada
- Xin Xin, Southeast University
- Wenfang Xie, Concordia University, Canada

5: Panel 5: Technological Development Trends and Future Forms of Unmanned Systems

Panelists:

- Yang Shi, University of Victoria, Canada, Fellow of the Royal Society of Canada
- Ben M. Chen, The Chinese University of Hong Kong, Fellow of the Academy of Engineering, Singapore
- Wenhua Chen, The Hong Kong Polytechnic University, Academician of the European Academy of Sciences
- Jinjun Shan, York University, Canada, Fellow of the Canadian Academy of Engineering
- Wen Yu, National Polytechnic Institute of Mexico, Member of the Mexican Academy of Sciences

6: Panel 6: How to Facilitate the Two-Way Flow Between Research Innovation and Practical Applications

Panelists:

- Zheng Hong (George) Zhu, York University, Fellow of the Canadian Academy of Engineering
- Furong Gao, The Hong Kong University of Science and Technology
- Chengbin Chu, Université Gustave Eiffel, France
- Kang Li, University of Leeds, UK
- Xiang Li, Singapore Institute of Manufacturing Technology

7: Panel 7: How to Effectively Integrate Artificial Intelligence with Automation Science

Panelists:

- Yongduan Song, Lingnan University, Hong Kong, China/ Chongqing University, Foreign Member of the Chinese Academy of Engineering, Editor-in-Chief of IEEE Transactions on Neural Networks and Learning Systems
- Carlos A. Coello Coello, National Polytechnic Institute of Mexico, Editor-in-Chief of IEEE Tranactions on Evolutionary Computation
- Kwong Sam Tak Wu, Lingnan University, Hong Kong, China, Fellow of the Canadian Academy of Engineering
- Xun Xu, University of Auckland, Fellow of Engineering New Zealand
- Juergen Branke, University of Warwick, UK
- Shengxiang Yang, De Montfort University, UK

8: Panel 8: Directions for Automation Education and Teaching Reform in the Era of Artificial Intelligence

Panelists:

- Yaochu Jin, Westlake University, Academician of the European Academy of Sciences
- Mingcong Deng, Tokyo University of Agriculture and Technology, Member of the Engineering Academy of Japan
- Xiaoou Li, Cinvestav-IPN, Member of the Mexican Academy of Sciences
- Ziqiang Lang, University of Sheffield, UK
- Zhan Shu, University of Alberta, Canada

The excellence of the program would not be possible without tremendous contributions of the NOC and IPC members, associate editors who organized the review of the papers, and the reviewers. We would also like to acknowledge the incredible supports from our conference sponsors.

IAI 2026 is sponsored by Northeastern University, China, State Key Laboratory of Synthetical Automation for Process Industries (SAPI), Control Engineering of China and Shenyang Association for Association for Science and Technology, and technically co-sponsored by IEEE Industrial Electronics Society.

All participants are invited to explore the wonderful landscape and nature of Shenyang. There will be a number of volunteers throughout the conference who will be happy to provide help. Please do not hesitate to stop at the conference registration desk or contact any volunteer if you have questions or need help. We hope you will enjoy your stay in beautiful Shenyang, China.

Yaochu Jin, Tianyou Chai (General Co-Chairs of IAI 2026)
Mingchong Deng, Huijun Gao (Program Co-Chairs of IAI 2026)

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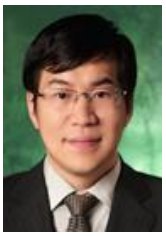
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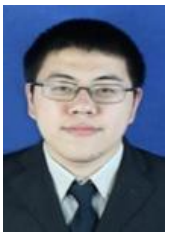


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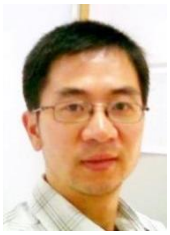


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大会专题研讨会 (Panel Sessions)

Panel Sessions 1

8 月 19 日 08:30-10:15 August 19, 08:30-10:15

友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

Enhancing Young Scholars' Academic Writing Skills and Journal Service Capabilities

青年学者论文写作与期刊学术服务能力提升

Panelists: S. Joe Qin (Lingnan University, Hong Kong, China)
Peng Shi (The University of Adelaide, Australia)
Xin Yao (Lingnan University, Hong Kong, China)
Guoxiang Gu (Louisiana State University, USA)
Ling Shi (The Hong Kong University of Science and Technology, Hong Kong, China)

Chair: Yuzhe Li (Northeastern University, China)



S. Joe Qin is currently the Wai Kee Kau Chair Professor of Data Science and President of Lingnan University in Hong Kong. He previously served as Principal Engineer at Emerson Process Management from 1992 to 1995. Following this, he held various academic positions at the University of Texas at Austin from 1995 to 2007, including Assistant Professor, Associate Professor, and Professor. From 2003 to 2007, he held the Paul D. and Betty Robertson Meek and American Petrofina Foundation Centennial Professorship in Chemical Engineering.

From 2007 to 2019, he was the Fluor Professor at the Viterbi School of Engineering of the University of Southern California, during which he took a three-year leave to serve as Vice President and Presidential Chair Professor at The Chinese University of Hong Kong, Shenzhen. From January 2020 to June 2023, he served in Hong Kong as the inaugural Dean of the School of Data Science and Chair Professor of Data Science at the City University of Hong Kong.

Professor Qin's educational background is multidisciplinary. He obtained his B.S. and M.S. degrees in Automatic Control from Tsinghua University in Beijing, China, in 1984 and 1987, respectively. He then continued studying for his Ph.D. in Automation at Tsinghua University until 1989, when he moved to the U.S. to pursue a Ph.D. in Chemical Engineering at the University of Maryland, College Park, which he completed in June 1992.

Professor Qin is a Member of the European Academy of Sciences and Arts (EASA), a Fellow of the Hong Kong Academy of Engineering (HKAE), the U.S. National Academy of Inventors, the International Federation of Automatic Control (IFAC), AIChE, and IEEE. He is the recipient of the 2022 CAST Computing in Chemical Engineering Award by the American Institute of Chemical Engineers (AIChE) and the 2022 IEEE CSS Transition to Practice Award. To date, he is the first and only recipient from China to receive both awards. Professor Qin was inducted into Control Global's Process Automation Hall of Fame in April 2026, and he is the only scholar from the Hong Kong SAR to receive this distinction.

In 2025, Professor Qin received a Second Prize at the Natural Science Award of the Chinese Association of Automation, a Second Prize at the Liaoning Provincial Science and Technology Awards, a Silver Medal at the International Exhibition of Inventions Geneva, and a Silver Award at the Silicon Valley International Festival. He was also named among the World’s Top 2% Scientists by Stanford University from 2022 to 2025.

His early career accolades include the U.S. National Science Foundation CAREER Award, the 2011 Northrop Grumman Best Teaching award at Viterbi School of Engineering, the DuPont Young Professor Award, Halliburton/Brown & Root Young Faculty Excellence Award, NSF-China Outstanding Young Investigator Award, MOE-China Changjiang Professorship, and the IFAC Best Paper Prize for a model predictive control paper published in Control Engineering Practice.

With a prolific publication record of over 470 international journal papers, book chapters, conference papers, and presentations, Professor Qin is also the inventor of 15 U.S. patents. He has delivered over 130 invited seminars and conducted 26 short courses or workshops for industries and technical conferences. His h-indices for Web of Science, SCOPUS, and Google Scholar are 72, 77, and 91, respectively, and he has garnered over 45,400 citations on Google Scholar. He has advised more than 40 Ph.D. students, with 34 successfully graduating with Ph.D. degrees. His research interests encompass data science and analytics, machine learning, process monitoring, model predictive control, system identification, smart manufacturing, smart cities, energy efficiency, and predictive health maintenance.

Professor Qin has served as Senior Editor of Journal of Process Control, Editor of Control Engineering Practice, and a Member of the Editorial Board for Journal of Chemometrics, as well as Associate Editor for several other international journals. He was the National Organization Chair of the 10th IFAC Symposium on Advanced Control of Chemical Processes ADCHEM 2018.

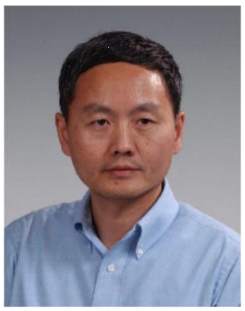


Peng Shi is a Distinguished Professor, Director of Laboratory of Advanced Unmanned Systems, and Laboratory of Cyber-Physics-Human Systems at Adelaide University, Australia.

His research interests include systems and control theory with applications to autonomous and robotic systems, cyber-physical-human systems and artificial intelligence. His work has been widely recognised with distinctions, such as the IEEE SMC Lotfi Zadeh Pioneer Award (2025); IEEE Nobert Wiener Award (2024); Annual Scientific Award (2024), and Ramesh Agarwal Life-time Achievement Award (2023) from International Engineering and Technology Institute; M. A. Sargent Medal Award from Engineers Australia in 2022; recognition of Highly-Cited Researcher from 2014-2025; Most Cited Researcher in Electrical and Electronic Engineering from Times Higher Education in 2018; Lifetime Achiever Leader-Board and Field Leader from The Australian Research Review from 2019-2024; Outstanding Research Achievement Award from University of Adelaide in 2020; and Chancellor's Gold Medal Award for Outstanding Research Performance from Victoria University in 2018. His professional services include the Member of Board of Governors, Vice President, and Distinguished Lecturer of IEEE SMC Society, and Editor-in-Chief of IEEE Transactions on Cybernetics and Senior Editor of IEEE Access. He is a Fellow of Australian Academy of Technological Science and Engineering; International Member of Engineering Academy of Japan, Academy of Europe, as well as a Fellow of IEEE, IET, IEA and CAA.



Xin Yao is the Vice-President (Research and Innovations) and the Tong Tin Sun Chair Professor of Machine Learning at Lingnan University, Hong Kong. Previously, he held academic positions at the Southern University of Science and Technology (China), the University of Birmingham (UK), Australian Defence Force Academy at the University of New South Wales (Australia), and the University of Science and Technology of China (China). Prof Yao was elected as an IEEE Fellow in 2003 and served as the Editor-in-Chief of IEEE Transactions on Evolutionary Computation in 2003-08 and the President of the IEEE Computational Intelligence Society in 2014-15. He won the Royal Society Wolfson Research Merit Award in 2012, the IEEE Computational Intelligence Society Evolutionary Computation Pioneer Award in 2013, and the prestigious IEEE Frank Rosenblatt Award in 2020. His main research interests include evolutionary computation, machine learning and their applications. His work has won three IEEE Transactions on Evolutionary Computation Outstanding Paper Awards, one IEEE Transactions on Neural Networks Outstanding Paper Award, one IEEE Donald G. Fink Prize Paper Award, among others at journals and conferences. He has been a Clarivate Highly Cited Researcher since 2022.



Guoxiang Gu (F'10) received the Ph.D. degree in Electrical Engineering from University of Minnesota, Minneapolis, MN, USA, in 1988. From 1988 to 1990, he was with the Department of Electrical Engineering, Wright State University, Dayton, OH, USA, as a Visiting Assistant Professor. He has held visiting positions with Wright-Patterson Air Force Base, OH, USA, and with the Hong Kong University of Science and Technology, Hong Kong. Since 1990, he joined Louisiana State University (LSU), Baton Rouge, LA, USA, where he is currently a Professor of Electrical and Computer Engineering. He has authored two books, over 90 archive journal papers, and numerous book chapters and conference papers. His research interests include networked control systems, modeling and identification, and industrial applications. Dr. Gu served as an Associate Editor for IEEE Transactions on Automatic Control from January 1998 to December 2001 and from January 2018 to December 2021, SIAM Journal on Control and Optimization from 2006 to 2009, and Automatica from 2006 to 2012. He is currently the F. Hugh Coughlin/CLECO Distinguished Professor of Electrical Engineering at LSU and Life Fellow of IEEE.



Ling Shi received his B.E. degree in Electrical and Electronic Engineering from The Hong Kong University of Science and Technology (HKUST) in 2002 and Ph.D. degree in Control and Dynamical Systems from The California Institute of Technology (Caltech) in 2008. He is currently a Professor in the Department of Electronic and Computer Engineering at HKUST with a joint appointment in the Department of Chemical and Biological Engineering (2025-2028), and the Director of The Cheng Kar-Shun Robotics Institute (CKSRI). His research interests include cyber-physical systems security, networked control systems, sensor scheduling, event-based state estimation, and multi-agent robotic systems (UAVs and UGVs). He served as an editorial board member for the European Control Conference 2013-2016. He was a subject editor for International Journal of Robust and Nonlinear Control (2015-2017), an associate editor for IEEE Transactions on Control of Network Systems (2016-2020), an associate editor for IEEE Control Systems Letters (2017-2020), and an associate editor for a special issue on Secure Control of Cyber Physical Systems in IEEE Transactions on Control of Network Systems (2015-2017). He also served as the General Chair of the 23rd International Symposium on Mathematical Theory of Networks and Systems (MTNS 2018). He is currently serving as a member of the Engineering Panel (Joint Research Schemes) of the Hong Kong Research Grants Council (RGC) (2023-2026). He received the 2024 Chen Han-Fu Award given by the Technical Committee on Control Theory, Chinese Association of Automation (TCCT, CAA). He is a member of the Young Scientists Class 2020 of the World Economic Forum (WEF), a member of The Hong Kong Young Academy of Sciences (YASHK), and he is an IEEE Fellow.

Panel Sessions 2

8 月 19 日 10:30-12:15 August 19, 10:30-12:15

友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

New Intersections Between Control Theory and Intelligent Theory in the Era of Artificial Intelligence

人工智能时代下控制理论与智能理论的新碰撞

Panelists: Zhong-Ping Jiang (New York University, USA)

Derong Liu (Anhui University, China)

Ye-Hwa Chen (Georgia Institute of Technology, USA)

Tingwen Huang (Shenzhen University of Advanced Technology, China)

Qichun Zhang (Buckinghamshire New University, UK)

Chair: Tengfei Liu (Northeastern University, China)



Zhong-Ping Jiang received the M.Sc. degree in statistics from the University of Paris XI, France, in 1989, and the Ph.D. degree in automatic control and mathematics from ParisTech-Mines, France, in 1993.

Currently, he is an Institute Professor in the Department of Electrical and Computer Engineering at the Tandon School of Engineering, New York University. His main research interests include stability theory, robust/adaptive/distributed nonlinear control, robust adaptive dynamic programming, reinforcement learning and their applications to information, mechanical, transportation and biological systems.

Prof. Jiang currently serves the IEEE Intelligent Transportation Systems Society's Board of Governors and leads the Distinguished Lecturer program. He has served as Deputy Editor-in-Chief, Senior Editor and Associate Editor for numerous journals. He is among the Clarivate Analytics Highly Cited Researchers and Stanford's Top 2% Most Highly Cited Scientists. In 2022, he received the Excellence in Research Award from the NYU Tandon School of Engineering. Prof. Jiang is a foreign member of the Academia Europaea (Academy of Europe) and an ordinary member of the European Academy of Sciences and Arts, and also is a Fellow of the IEEE, IFAC, CAA, AAIA and AAAS.



Derong Liu received the PhD degree in electrical engineering from the University of Notre Dame, USA, in 1994. He became a Full Professor of Electrical and Computer Engineering and of Computer Science at the University of Illinois Chicago in 2006. He was selected for the "100 Talents Program" by the Chinese Academy of Sciences in 2008, and he served as the Associate Director of The State Key Laboratory of Management and Control for Complex Systems at the Institute of Automation, from 2010 to 2016. He is currently Professor at Anhui University, Hefei, China. He has published 13 books. He received the International Neural Network Society's Dennis Gabor Award in 2018 and the IEEE CIS Neural Network Pioneer Award in 2022. He has been named a highly cited researcher by Clarivate since 2017. He was the Editor-in-Chief of the IEEE Transactions on Neural Networks and Learning Systems from 2010 to 2015. He is the Editor-in-Chief of Artificial Intelligence Review (Springer). He is a Fellow of the IEEE, a Fellow of the International Neural Network Society, a Fellow of the International Association of Pattern Recognition, and a Member of Academia Europaea (The Academy of Europe).



Ye-Hwa Chen received his B.S. in Chemical Engineering from the Taiwan University in 1979. He then received his M.S. and Ph.D. in Mechanical Engineering from the University of California, Berkeley, in 1983 and 1985, respectively. He served as a faculty in Syracuse University during 1986-1988. Since 1988, he has been with the George W. Woodruff School of Mechanical Engineering of Georgia Institute of Technology where he is currently a professor.

He has been serving as regional editor and associate editor for seven journals. He has published over 350 refereed journal papers. He has received the IEEE Transactions on Fuzzy Systems Outstanding Paper Award, Sigma Xi Best Research Paper Award, and Sigma Xi Junior Faculty Award. A paper of his received the second highest citation in the IEEE Transactions on Industrial Electronics. He received the Passport Award, the Monopoly Award, and the "As Good As It Gets" Award from the Georgia Institute of Technology. He is the recipient of the Campanile Award from the Georgia Institute of Technology, the highest honor of the institute. His research interests include dynamical systems and mechatronic systems modeling and analysis, fuzzy systems, and control.



Tingwen Huang is a Chair Professor at Shenzhen University of Advanced Technology. He received his B.S. degree from Southwest University, China, 1990, his M.S. degree from Sichuan University, China, 1993, and his Ph.D. degree from Texas A&M University, College Station, Texas, 2002. After graduated from Texas A&M University, he worked as a Visiting Assistant Professor there. Then he joined Texas A&M University at Qatar as an Assistant

Professor in August 2003, then he was promoted to Professor in 2013. Dr. Huang’s research areas include neural networks, chaotic dynamical systems, complex networks, optimization and control, smart grid. He a Fellow of IAPR, IEEE and TWAS (The World Academy of Sciences) and Member of The European Academy of Sciences and Arts.



Qichun Zhang holds a PhD degree in Electrical and Electronic Engineering from the University of Manchester, UK. He also holds a MEng degree in Control Theory and Control Engineering and a BEng degree in Automation both from Northeastern University in China. Currently he is Professor of Inclusive AI and Founding Director of the centre of AI and future inclusive technologies at Buckinghamshire New University. Prior to this position, he held roles as Associate Professor at the University of Bradford, Senior Lecturer at De Montfort University and Senior Research Officer at the University of Essex. His current research interests include stochastic dynamic systems, stochastic distribution control, AI for Engineering, data-driven modelling and design. He has published more than 130 publications widely over the above areas. He is Chartered Engineer, Fellow of British Computer Society, Fellow of Royal Society of Arts, and holds Senior Membership in IEEE. Currently, he serves as an Associate Editor for leading journals, such as Journal of Intelligent Manufacturing, Cluster Computing, etc. and is a member of the EPSRC Peer-review College.

Panel Sessions 3

8 月 19 日 14:30-16:15 | August 19 14:30-16:15

友谊宫 辽宁厅 B | Friendship Palace, Liaoning Hall B

Frontier and Emerging Trends in Artificial Intelligence and Robotics—Part 1

人工智能与机器人发展的前沿趋势-1

Panelists: Max Q.-H. Meng (Southern University of Science and Technology, China)
Simon X. Yang (University of Guelph, Canada)
Mengjie Zhang (Victoria University of Wellington, New Zealand)
Qingguo Wang (Wuhan University of Science and Technology, China)
Zhibo Pang (Peking University, China)

Chair: Jiayue Sun (Northeastern University, China)



Max Q.-H. Meng is Chair Professor and Head of EEE at SUSTech, Fellow of CAE and IEEE. Formerly a tenured professor at the University of Alberta and head of EE at CUHK, he specializes in robotics perception and intelligence. Ranked in the global top 2% of scientists by Stanford, he has published over 1,000 papers, holds 40+ patents, and won 30+ awards, including the IROS Harashima Award. He has led 60+ research projects (¥100M+), delivered 200+ keynotes, and serves as editor for leading journals, including founding Editor-in-Chief of Biomimetic Intelligence and Robotics. He chaired IEEE/RSJ IROS 2005 and IEEE ICRA 2021.



Simon X. Yang received the B.Sc. degree in engineering physics from Beijing University, China in 1987, the first of two M.Sc. degrees in biophysics from Chinese Academy of Sciences, Beijing, China in 1990, the second M.Sc. degree in electrical engineering from the University of Houston, USA in 1996, and the Ph.D. degree in electrical and computer engineering from the University of Alberta, Edmonton, Canada in 1999. Prof. Yang joined the School of Engineering at the University of Guelph, Canada in 1999. Currently he is a Professor and the Head of the Advanced Robotics & Intelligent Systems (ARIS) Laboratory at the University of Guelph in Canada.

Prof. Yang has diversified research expertise. His research interests include intelligent systems, robotics, neural networks, fuzzy systems, sensors and multi-sensor fusion, wireless sensor networks, control systems, machine learning, and computational neuroscience. His significant research contributions can be reflected by his original and innovative work in biologically inspired approaches and applications to real-time motion planning, tracking and control of robotic systems, and various engineering and biomedical systems. He has published about 700 referred papers, including over 420 journal papers (over 100 in IEEE Transactions). He has been listed as the World's Top 2% Researchers by Stanford's Standardized Citation Indicators from 2020 to 2025.

Prof. Yang he has been very active in professional activities. Prof. Yang has served as the founding Editor-in-Chief of Intelligence and Robotics; and an Associate Editor or Editorial Board member of IEEE Transactions on Cybernetics, IEEE Transactions on Artificial Intelligence, IEEE Transactions on Neural networks and Learning Systems, and several other journals. He was a panel member of the NSERC Discovery Grants Selection Committee on Electrical and Computer Engineering, a panel member of the NSERC-CIHR (Canadian Institutes of Health Research) Collaborative Health Research Projects (CHRP) Selection Committee, and a panel member of CIHR Grants Selection Committee. He has been involved in the organization of many international conferences. Among many of his awards, he was a recipient of the Distinguished Professor Award at the University of Guelph.



Mengjie Zhang is a Fellow of Royal Society of New Zealand , a Fellow of Engineering New Zealand , a Fellow of IEEE , an IEEE Distinguished Lecturer, Professor of Computer Science (Artificial Intelligence) at Victoria University of Wellington, where he heads the interdisciplinary Evolutionary Computation and Machine Learning Research Group. He is also the Director of the Centre for Data Science and Artificial Intelligence at the University. His research is mainly focused on AI, machine learning and big data. He received the "Evo* Award for Outstanding Contribution to Evolutionary Computation in Europe 2023", the "2024 Australasian Artificial Intelligence Distinguished Research Contribution Award", and the ACM SIGEVO Outstanding Contribution Award in 2025. He is also a Clarivate Highly Cited Researcher in 2023, 2024 and 2025. Since 2007, he has been listed as a top five (currently No. 2) world genetic programming researchers by the GP bibliography.

Prof Zhang is a member of the IEEE CIS Nomination Committee and a member of IEEE CIS Fellow Search Committee. He is also a part chair for CIS Awards Committee, a past chair of the IEEE CIS Intelligent Systems Applications Technical Committee, the Emergent Technologies Technical Committee and the Evolutionary Computation Technical Committee, a past Chair for IEEE CIS PubsCom Strategic Planning Committee, and the founding chair of the IEEE Computational Intelligence Chapter in New Zealand.



Qingguo Wang received, respectively, B.Eng. in Chemical Engineering in 1982, M. Eng. in 1984 and Ph.D. (with highest honor) in 1987 both in Industrial Automation, all from Zhejiang University (ZU) of People's Republic of China (PRC). From 1987 to 1989, he was a PRC Postdoctoral Fellow with Department of Mechanical Engineering/the Institute for Fluid Power Transmission and Control (A National Key Lab of PRC), ZU. In 1989, he joined Department of Chemical Engineering/Research Institute of Industrial Process Control (A National Key Lab of PRC), ZU, as an Associate Professor. He received the Young Scientist Award of the Chinese Association of Science and Technology in 1990, and He was named as an Outstanding China-conferred Ph.D by the State Education Committee of PRC in 1991. He held a Alexander-von-Humboldt Research Fellowship of Germany with University of Duisburg from 1990 to 1991 and University of Kassel from 1991 to 1992. From 1992 to 2015, he was with Department of Electrical and Computer Engineering of the National University of Singapore, where he became a Full Professor in 2004. He was a Distinguished Professor with Institute for Intelligent Systems, Faculty of Engineering and the Built Environment, University of Johannesburg, South Africa, 2015-2020. He holds A1 rating by the National Research Foundation of South Africa. He is a member of Academy of Science of South Africa. From 2020 to 2025, he was a Chair Professor with Beijing Normal-Hong Kong Baptist University, and a Professor with Institute of Artificial Intelligence and Future Networks, Beijing Normal University (Zhuhai), China. He is currently a Chair Professor with School of Mechanical Engineering, Wuhan University of Science and Technology, China. His research lies in the field of Automation/AI with focuses on modeling, estimation, prediction, control and optimization with a wide range of applications including, but not limited to, industrial and environmental processes, energy systems, defense systems, medical technology



Zhibo Pang (M'13, SM'15) received MBA in Innovation and Growth from University of Turku in 2012 and PhD in Electronic and Computer Systems from KTH Royal Institute of Technology in 2013. He is currently a Full Professor with Tenure at Peking University, China. Before that, he was Senior Principal Scientist at ABB Corporate Research Sweden, Adjunct Professor at KTH Royal Institute of Technology, and Adjunct Professor at University of Sydney. He is a Standing Committee Member of IEEE Industrial Electronics Society, Steering Committee Member of IEEE IoT Technical Community, Chair of IEEE Technical Committee on Cloud and Wireless Systems for Industrial Applications, and Co-Chair of IEEE TC on Industrial Informatics. He is Associate Editor of IEEE TII, IEEE JBHI, IEEE TCE, IEEE JESTIE, and IEEE IoTM. He works on embodied AI, robotics, control, computing, communication, and electronics for autonomous systems.

Panel Sessions 4

8 月 20 日 08:30-10:15 August 20 08:30-10:15

友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

Frontier and Emerging Trends in Artificial Intelligence and Robotics—Part 2

人工智能与机器人发展的前沿趋势-2

Panelists: Ren C. Luo (Taiwan University, China)
Chun-Yi Su (Concordia University, Canada)
Xin Xin (Southeast University, China)
Wenfang Xie (Concordia University, Canada)

Chair: Zhi Li (Northeastern University, China)



Ren C. Luo, an IEEE (Institute of Electrical and Electronics Engineers) Life Fellow and IET Fellow received BS, MS and PhD Degrees in Electrical Engineering from the Technische Universitaet Berlin, Berlin, Germany. He served as an Irving T. Ho Chair Professor at the Department of Electrical Engineering in Taiwan University; Prof. Luo has served as an Assistant Professor, tenured Associate Professor and tenured Full Professor of Dept. of Electrical and Computer Engineering in North Carolina State University, Raleigh, USA. He also served as Toshiba Chair Professor in the University of Tokyo, Tokyo, Japan. He has served two-terms as President of National Chung Cheng University, and two terms as Dean of Engineering, one of the major universities in Taiwan. He is the Founding President of Robotics Society of Taiwan. He served as Chief Technology Officer of Fair Friend Group (FFG) Corporation., the world 3rd largest machine tool manufacturer, and was Chief Technology Officer of ASUS Corporation. He served more than 15 years as Chair of Innovative Research and Development Committee of TECO Co., (Tung-Yuan Electric Company) and served on as member of Independent Board of Directors for a number of public traded companies in Taiwan.

Prof. Luo is currently the IEEE-IES Chair of Fellow Evaluation Committee, and was the President of IEEE Industrial Electronics Society. Prof. Luo has served as European Union (EU) Industrial Development Advisory Committee Member. He has served as Science and Technology Advisor to the Prime Minister in Executive Yuan of Taiwan, ROC and Science and Technology Advisor of Ministry of Economic Affairs. He has served as Founding Chair of governmental founded SBIR (Small Business Innovative Research) Program. He also served as Advisor to the governmental research institutions such as ITRI, MIRDC, PIDC, and served on numerous Advisory Committee

and competitive project proposal evaluation Committee of governmental agencies such as NSF, DARPA, DOE, NASA in USA, and EU countries, Qatar, Japan, Australia, Singapore, Hong Kong etc.

Prof. Luo's professional expertise includes AI enabled intelligent robotic control systems, computer vision, multi-sensor fusion and integration, 3D printing and intelligent manufacturing automation technologies. He has authored over 550 papers, published in refereed international Transactions/ Journals, Conferences and over 30 international patents. As a Thesis Advisor, Prof. Luo has supervised and graduated more than 200 MS. and PhD students.
Prof. Luo has served 6 years as Editor-in- Chief of world top class Journals incl. IEEE Transactions on Industrial Informatics and 5 years Editor-in- Chief of IEEE/ASME Transactions on Mechatronics. He has been invited as Keynote Speakers for more than 200 major international conferences.

Prof. Luo received numerous prestigious major international awards including IEEE Eugene Mittelmann Outstanding Research Achievement Award, IEEE IROS Innovative Technologies Award; IEEE ICRA/IEEE IES outstanding service awards, IEEE Millennium Achievement Award, ALCOA Company Outstanding Engineering Research Award, USA. Numerous Outstanding Research Awards of Ministry of Science and Technology in Taiwan, and Outstanding Research Awards of Taiwan University. He received Outstanding Engineering Professor of EE Society in Taiwan and Automation Medal Award from Automation Society in Taiwan etc. He also served as General Chairs for more than 20 IEEE sponsored major international conferences such as IECON, INDIN, ICPS, MFI ICIT, etc., including the largest and most prestigious world robotics conferences IEEE-IROS 1992, 2010 (Intelligent Robots and Systems) and IEEE-ICRA2003 (International Conference on Robotics and Automation) etc.



Chun-Yi Su received his Ph.D. in Control Engineering from the South China University of Technology in 1990. After a seven-year appointment at the University of Victoria, he joined Concordia University in 1998, where he is currently a Professor and Honorary Concordia University Research Chair. His research focuses on control theory and its applications to mechanical systems, with recent emphasis on modeling and control of soft robotic systems. He has authored or co-authored over 500 publications in journals, book chapters, and conference proceedings.

Dr. Su has served as an Associate Editor for several leading journals, including IEEE Transactions on Automatic Control, IEEE Transactions on Control Systems Technology, and IEEE Transactions on Cybernetics. He is also a Distinguished Lecturer of the IEEE Robotics and Automation Society. In addition, he has contributed to numerous conferences as an organizing committee member, including roles as General Chair and Program Chair.



Xin Xin received the B.S. degree from the University of Science and Technology of China, Hefei, China, in 1987, and the Ph.D. degree from Southeast University, Nanjing, China, in 1993. From 1991 to 1993, he conducted part of his doctoral research at Osaka University, Japan, as a jointly supervised doctoral student supported by the Japanese Government Scholarship. He received a second doctoral degree in engineering from Tokyo Institute of Technology, Japan, in 2000. From 1993 to 1995, he was a postdoctoral researcher and subsequently an associate professor at Southeast University. From 1996 to 1997, he was an Advanced Industrial Technology Researcher with the New Energy and Industrial Technology Development Organization (NEDO), Japan. From 1997 to 2000, he was an assistant professor at Tokyo Institute of Technology. In 2000, he joined Okayama Prefectural University, Japan, where he became a full professor in 2008 and served in several academic and administrative positions, including Chair of the Department of Systems Engineering. Since 2024, he has been a Chief Professor of Southeast University, Nanjing, China, Director of the Key Laboratory of Measurement and Control of Complex Systems of Engineering, Ministry of Education, and Deputy Dean of the Intelligent Unmanned Systems Research Institute. He has about 260 publications in journals, international conference proceedings, and book chapters. He served on the associate editor of journals for the Robotics Society of Japan, the Society of Instrument and Control Engineers (SICE) of Japan, and the IEEE Control Systems Letters. He is currently an associate editor for Automatica. He is now a member of technical committee of large-scale complex systems of IFAC. He has over 260 publications in journals, international conferences, monographs and book chapters. He received the excellent paper award of the second national conference on robotics in 1988, and the conference paper award of SICE 3rd Annual Conference on Control Systems in 2004. He served as principal investigator for six research projects funded by the Japan Society for the Promotion of Science (JSPS), as well as five projects supported by three Japanese research foundations. In China, he has also served as principal investigator for projects supported by the China Postdoctoral Science Foundation, the Young Scientists Fund and General Program of the National Natural Science Foundation of China (NSFC), national high-level talent programs, Jiangsu Province innovation and entrepreneurship talent programs, and the Frontier Technologies R&D Program of Jiangsu Province. His current research interests include humanoid robotics, underactuated systems, and dynamics and control of nonlinear and complex systems.



Wenfang Xie is a full Professor with Concordia University, Montreal, Canada. Her research interests include identification and control in mechatronics, artificial intelligent control, advanced process control and robotic visual servoing. She has published over 200 journal and conference papers. She has received various grants including NSERC Discovery grant (since 2003), NSERC Create grant, NSERC Horizon

grant, NSERC Alliance grant, FQRNT (principal investigator), MDEIE International Research and Innovation Initiatives, CFI leading edge. She has been an active member of many IEEE conference organizing committees. She is a CSME fellow and IEEE senior member. She has served as co-chair of NSERC Discovery program evaluation group of mechanical engineering (2022-2024) and Program Fit Advisor of NSERC Horizon program. In 2024, Dr. Xie was awarded Fulbright Research Chair and The Gina Cody School of Engineering and Computer Science Research Excellence Tier I Award.

Panel Sessions 5

8 月 20 日 10:30-12:15 August 20 10:30-12:15

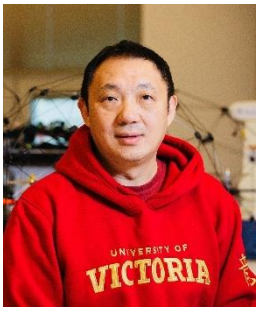
友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

Technological Development Trends and Future Forms of Unmanned Systems

无人系统的技术发展趋势与未来形态

Panelists: Yang Shi (University of Victoria, Canada)
Ben M. Chen (The Chinese University of Hong Kong, China)
Wenhua Chen (The Hong Kong Polytechnic University, China)
Jinjun Shan (York University, Canada)
Wen Yu (National Polytechnic Institute of Mexico, Mexico)

Chair: Dongsheng Yang (Northeastern University, China)



Yang Shi is a Professor in the Department of Mechanical Engineering, University of Victoria, Victoria, BC, Canada. His current research interests encompass networked and distributed systems, model predictive control (MPC), cyber-physical systems (CPS), robotics and mechatronics, navigation and control of autonomous systems (AUV and UAV), and energy system applications.

Dr. Shi's dedication to teaching and mentorship has been widely recognized. He received the University of Saskatchewan Student Union Teaching Excellence Award in 2007, the Faculty of Engineering Teaching Excellence Award at the University of Victoria (UVic) in 2012, and the 2023 REACH Award for Excellence in Graduate Student Supervision and Mentorship.

His research contributions have also earned numerous prestigious awards, including the Humboldt Research Fellowship for Experienced Researchers (2018), the CSME Mechatronics Medal (2023), the IEEE Dr.-Ing. Eugene Mittelmann Achievement Award (2023), the 2024 IEEE Canada Outstanding Engineer Award, and more recently, the 2025 REACH Award – David H. Turpin Gold Medal for Career Achievement in Research (UVic).

Dr. Shi has been providing service to the academic and professional communities. He served as Vice President of Conference Activities for the IEEE Industrial Electronics Society (IES) and as Chair of the IEEE IES Technical Committee on Industrial Cyber-Physical Systems. He currently serves as a Council Member of the International

Federation of Automatic Control (IFAC). In editorial capacities, he is the Editor-in-Chief of the IEEE Transactions on Industrial Electronics and also serves as an Associate Editor for several prestigious journals, including Automatica, IEEE Transactions on Automatic Control, and Annual Reviews in Control, among others.

He is a Fellow of Royal Society of Canada (RSC), Canadian Academy of Engineering (CAE), Engineering Institute of Canada (EIC), IEEE, ASME, CSME, and a registered Professional Engineer in British Columbia, Canada.



Ben M. Chen is a Choh-Ming Li Chair Professor and Head of the Department of Mechanical and Automation Engineering at the Chinese University of Hong Kong (CUHK). Prior to joining CUHK in 2018, he was a Provost's Chair Professor in the Department of Electrical and Computer Engineering at the National University of Singapore, where he worked for 25 years. He also served as an Assistant Professor at the State University of New York at Stony Brook, USA, from 1992 to 1993 and worked as a Software Engineer at South China Computer Corporation from 1983 to 1986. His current research focuses on unmanned systems and their applications.

Professor Chen is a Fellow of the IEEE, CAA, HKIE, and the Academy of Engineering, Singapore (SAEng). He has authored or co-authored hundreds of research articles and ten monographs in the fields of control engineering, unmanned systems, and financial market modeling. His unmanned systems research teams have frequently won championships at international drone competitions. He has served on the editorial boards of several prestigious international journals, including Automatica and IEEE Transactions on Automatic Control. He currently serves as Editor-in-Chief for Unmanned Systems and Engineering Artificial Intelligence.

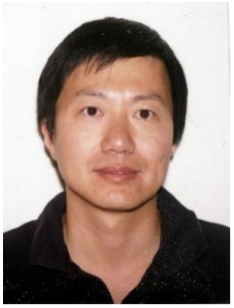


Wenhua Chen currently holds Chair Professor in Robotics and Autonomous Systems, Head of the Department of Aeronautical and Aviation Engineering at the Hong Kong Polytechnic University, the Director of Research Centre for Low Altitude Economy (RCLAE), and the Director of Hong Kong Polytechnic University-University of Macau Joint Research Centre for Robotics and Embodied Intelligence (CREI). Before that, he was Professor in Autonomous Vehicles in the Department of Aeronautical and Automotive Engineering at Loughborough University, UK until 2025. Prof. Chen has a considerable experience in control, signal processing and artificial intelligence and their applications in aerospace, automotive and agriculture systems. In the last 20 years, he has been working on the development and application of unmanned aircraft and intelligent vehicle technologies, spanning autopilots, situational awareness, decision making, verification, remote sensing for

precision agriculture and environment monitoring. He is a Chartered Engineer, and a Fellow of IEEE, the Institution of Mechanical Engineers and the Institution of Engineering and Technology, UK. Prof Chen was awarded a 5-years UK EPSRC (the Engineering and Physics Sciences Research Council) Established Career Fellowship in developing new control theory for robotics and autonomous systems.



Jinjun Shan is a Full Professor of Space Engineering at the Department of Earth and Space Science and Engineering, York University. He received his Ph.D. degree from Harbin Institute of Technology, China, in 2002. Prof. Shan’s accomplishments in research and engineering education have seen him recognized with prestigious recognitions such as the Fellow of Canadian Academy of Engineering (CAE), the Fellow of Engineering Institute of Canada (EIC), the Fellow of American Astronautical Society (AAS), and a member of European Academy of Sciences and Arts (EASA). He serves the profession as the Associate Editor for several field-leading journals. He is the founding director of Spacecraft Dynamics Control and Navigation Laboratory (SDCNLab) at York University.



Wen Yu received the B.S. degree in automation from Tsinghua University, Beijing, China, in 1990, and the M.S. and Ph.D. degrees in automatic control from Northeastern University, Shenyang, China, in 1992 and 1995, respectively. From 1995 to 1996, he was a Lecturer with the Department of Automatic Control at Northeastern University. In 1996, he joined the Center for Research and Advanced Studies of the National Polytechnic Institute (Cinvestav-IPN), Mexico City, Mexico, where he is currently a Full Professor with the Department of Automatic Control. He has held several visiting and research positions globally, including Research Fellow at the Mexican Petroleum Institute, Mexico City (2002 – 2003); Senior Visiting Research Fellow at Queen's University Belfast, U.K. (2006 – 2007); and Visiting Associate Professor at the University of California, Santa Cruz, USA (2009 – 2010). He has also held a Visiting Professorship at Northeastern University, China, since 2006. He has published more than 500 research papers, including over 220 journal articles and 10 monographic books. He served as the General Chair for the IEEE flagship annual meeting, the IEEE Symposium Series on Computational Intelligence (SSCI 2023). He has also served as an Associate Editor for IEEE Transactions on Cybernetics, IEEE Transactions on Neural Networks and Learning Systems, and Intelligence & Robotics. He is an IEEE Fellow and a member of the Mexican Academy of Sciences.

Panel Sessions 6

8 月 20 日 14:30-16:15 August 20 14:30-16:15

友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

How to Facilitate the Two-Way Flow Between Research Innovation and Practical Applications

如何推动科研创新与实际应用的双向流转

Panelists: Zheng Hong (George) Zhu (York University, Canada)

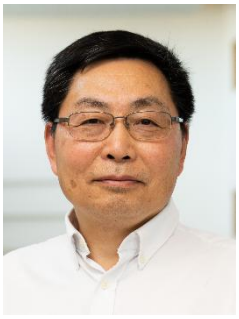
Furong Gao (The Hong Kong University of Science and Technology, China)

Chengbin Chu (Université Gustave Eiffel, France)

Kang Li (University of Leeds, UK)

Xiang Li (Singapore Institute of Manufacturing Technology, Singapore)

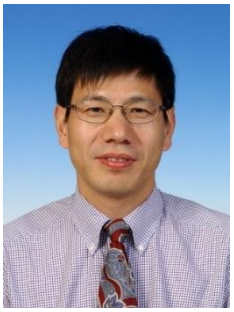
Chair: Ping Zhou (Northeastern University, China)



Zheng Hong (George) Zhu is Editor-in-Chief of Acta Astronautica and Professor and Tier 1 York Research Chair in Space Robotics and Artificial Intelligence in the Department of Mechanical Engineering at York University, Canada. His research spans spacecraft dynamics and control, tethered space systems, autonomous space robotics, computational control methodologies, and in-space additive manufacturing. He has published over 260 peer-reviewed journal papers and 190 conference papers.

Dr. Zhu is an Academician of the International Academy of Astronautics and a College Member of the Royal Society of Canada. He is a Fellow of the Canadian Academy of Engineering, the Engineering Institute of Canada, Engineers Canada, the Canadian Society of Mechanical Engineering, and the American Society of Mechanical Engineers. He is also an Associate Fellow of the American Institute of Aeronautics and Astronautics and serves as Vice-President of the International Society of Mechanical System Dynamics.

His achievements have been recognized with numerous prestigious awards, including the 2024 Solid Mechanics Medal and 2021 Robert W. Angus Medal from the Canadian Society for Mechanical Engineering, the 2024 Gold Medal and 2019 Engineering R&D Medal from the Ontario Professional Engineers Awards, and the 2021 York University President's Research Excellence Award.



Furong Gao is a Chair Professor of Chemical and Biological Engineering, Hong Kong University of Science and Technology (HKUST), he also serves HKUST as the Founding Director, Center for Polymer Processing and Systems (CPPS) since 2007 and international molding communities as the President, Society of Advanced Molding Technology (SAMT) since 2017.

Professor Gao received his BEng in Automation from China University of Petroleum in 1985, MEng and PhD, both in Chemical Engineering, from McGill University in 1989 and 1993, respectively. Before joining HKUST in 1995, he worked as a Senior Research Engineer from 1993 to 1995 in charge of Intelligent Process Control (IPC) project at Moldflow Pty Ltd (now, a part of Autodesk Inc), Melbourne, Australia. His research interest is in batch process automation method developments and their applications to polymer processing and energy management areas. To date, he has authored ~650 journal and conference papers, seven books, and 90 patents. He received numerous best paper awards and industrial recognition.

He has been committed to put his automation theories into practice, to this end, he collaborated with numerous companies in China,Hong Kong,Asia and around the world and he founded two companies in Shenzhen and Guangzou to help industries to enhance their productivity.



Chengbin Chu is a Professor at ESIEE Paris and the Grettia Laboratory, Université Gustave Eiffel, France. He received his B.Sc. and M.Sc. degrees in Electrical Engineering from Hefei University of Technology (China) and INPL (France) in 1985 and 1987, respectively. He then pursued his Ph.D. at INRIA and earned a Ph.D. in Computer Science and Production Management from the University of Metz (France) in 1990. Following his doctoral studies, he continued his career at INRIA, serving successively as an Expert Engineer and Research Officer until 1997.

From 1997 to 2008, he was Professor of Industrial Engineering at the University of Technology of Troyes, where he founded and directed the Industrial Systems Optimization Laboratory. From 2008 to 2017, he was with École CentraleSupélec (now part of Université Paris-Saclay), where he held the Chair in Supply Chain Management, sponsored by multinational companies including Carrefour, Danone, LVMH, and PSA Peugeot Citroën.
His research interests include the modeling, analysis, and optimization of manufacturing systems and supply chains. He is the author or co-author of more than 280 publications in leading international journals, including IEEE Transactions, Operations Research, SIAM Journal on Computing, European Journal of Operational Research, Transportation Science, and Transportation Research Part B. Two of his journal articles received the Best Paper

Award of the Year from the IEEE Robotics and Automation Society (1998) and Omega (2020), respectively. Three additional papers have received awards at international conferences.

Professor Chu has served as Principal Investigator or Principal Scientist for more than 20 research projects funded by the European Commission, the French Government, regional authorities, and industry, with a total funding of approximately €10 million. His research has been successfully transferred to industrial practice, resulting in significant economic and societal benefits for project partners. In recognition of his original scientific contributions and their strong impact on real-world applications, he received the First Prize of the Robert Faure Award in 1996. In 2004, he was appointed Changjiang Scholar Chair Professor by the Chinese Ministry of Education. He also served as Overseas Chair Professor at Xi'an Jiaotong University and as Overseas Director of its Department of Industrial Engineering.

He has served as Associate Editor of IEEE Transactions on Robotics and Automation, IEEE Transactions on Automation Science and Engineering, and IEEE Transactions on Industrial Informatics, as well as a member of the Editorial Board of Computers & Industrial Engineering. He is currently a member of the Editorial Board of the International Journal of Production Research.



Kang Li holds the Chair of Smart Energy Systems and is the Director of the Institute of Communication and Power Networks at School of Electronic and Electrical Engineering, University of Leeds. A control engineer by training, Kang’s work spans many research topics from control engineering to AI with substantial industrial applications in power and energy systems. His work on the development of minimal-invasive cloud-based energy consumption and process condition monitoring platform (Point Energy Technology) has been successfully adopted in food processing and polymer processing industries, winning 1015 Institute of Measurement and Control ICI Best Application prize, 2016 Northern Ireland INVENT award and 2016 finalist of the Sustainable Energy Awards 2016 from Sustainable Energy Authority of Republic of Ireland. In battery research, he has proposed constrained multi-objective battery charging control strategies to replace conventional CCCV charging protocol for batteries and successfully adopted Fibre Bragg Grating sensor technologies for battery state monitoring and estimation to improve battery safety and state estimation accuracy. He is currently leading the innovation and technical development of a £11M demonstrator of railway Energy Hubs in Scotland, a first of the kind novel microgrid solution to revolutionize railway traction power supply and railway decarbonization, transforming the inflexible rail demand to flexible load, and providing flexibility and ancillary services to the power grid. Kang has published over 300 international journal papers and edited 19 international conference proceedings in his area, winning over 15 national and international prizes and awards, including 2019 Springer

Nature ‘China New Development Award’ in recognition of the ‘exceptional contributions to the delivery of the UN Sustainable Development Goals’.



Xiang Li received her B.Eng. and M.Eng. degrees from Northeastern University, Shenyang, China, in 1982 and 1987, respectively, and her Ph.D. from Nanyang Technological University (NTU), Singapore, in 2000. She served as a lecturer at Northeastern University from 1982 to 1987 and was a research fellow at Tohoku University, Japan, from 1987 to 1989. In 1992, she joined the Singapore Institute of Manufacturing Technology (SIMTech), a research institute of the Agency for Science, Technology and Research (A*STAR), where she has held positions including Scientist, Senior Scientist, and Principal Scientist. She currently serves as an AI Manufacturing Consultant at SIMTech.

Dr. Li has over 25 years of research experience in machine learning, data mining, and artificial intelligence, with a strong focus on AI applications in manufacturing. She has led numerous research projects as a Principal Investigator (PI) in collaboration with leading local and international universities, including NTU, the National University of Singapore (NUS), and Carnegie Mellon University (CMU). She has also supervised many Ph.D. and Master's students from these universities.

Since 2004, Dr. Li has secured multiple A*STAR research grants as a PI or Co-PI. She has successfully led numerous industry projects involving the application of data mining, machine learning, and AI technologies to manufacturing production and operations. Her research and industrial collaborations span a broad range of sectors, including semiconductor, precision engineering, electronics, aerospace, energy and chemicals, and biomedical manufacturing. Her work focuses on developing intelligent manufacturing solutions that enhance product quality, optimize production processes, improve operational efficiency, and support digital transformation through Industrial AI.

Panel Sessions 7

8 月 21 日 14:00-15:45 August 21 14:00-15:45

友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

How to Effectively Integrate Artificial Intelligence with Automation Science

如何将人工智能与自动化科学进行有效结合

Panelists: Yongduan Song (Lingnan University, Hong Kong, China / Chongqing University, China)
Carlos A. Coello Coello (National Polytechnic Institute of Mexico, Mexico)
Kwong Sam Tak Wu (Lingnan University, Hong Kong, China)
Xun Xu (University of Auckland, New Zealand)
Juergen Branke (University of Warwick, UK)
Shengxiang Yang (De Montfort University, UK)

Chair: Weinan Gao (Northeastern University, China)



Yongduan Song is an International Member of the Chinese Academy of Engineering and an IEEE Fellow, as well as a Fellow of the Chinese Association for Artificial Intelligence and the Chinese Association of Automation. He serves as the Editor-in-Chief of IEEE Transactions on Neural Networks and Learning Systems (IEEE TNNLS), a top-tier international journal in artificial intelligence. Additionally, he acts as the Founding Editor-in-Chief of Journal of Automation and Intelligence, a high-startup English journal supported by the Excellence Action Plan for China's STM Journals. He chairs the Special Committee on Trustworthy Control Systems under the Chinese Association of Automation.

In his early academic career, he once directed the Cooperative Systems Center at the National Aeronautics and Space Administration (NASA) and was conferred the title of NIA Langley Distinguished Scientist. He led more than 30 research projects, including key programs funded by the National Natural Science Foundation of China, national key R&D plans of the Ministry of Science and Technology, and various provincial and ministerial research initiatives.



Kwong Sam Tak Wu is the Associate Vice-President (Strategic Research), J.K. Lee Chair Professor of Computational Intelligence, the Dean of the School of Graduate Studies and the Acting Dean of the School of Data Science of Lingnan University. Professor Kwong is a distinguished scholar in evolutionary computation, artificial intelligence (AI) solutions, and image/video processing, with a strong record of scientific innovations and real-world impacts. Professor Kwong was listed as the World’s Top 2% Scientists by Stanford University since 2022 and one of the most highly cited researchers by Clarivate in 2022 and 2023. He has also been actively engaged in knowledge transfer between academia and industry. He was elevated to IEEE Fellow in 2014 for his contributions to optimization techniques in cybernetics and video coding. He was a Fellow of the Asia-Pacific Artificial Intelligence Association (AAIA) in 2022, and the President of the IEEE Systems, Man, and Cybernetics Society (SMCS) in 2021-23. He is a fellow of US National Academy of Inventors (NAI) and the Hong Kong Academy Awards of Engineering and Sciences (HKAES). Professor Kwong has a prolific publication record with over 350 journal articles, and 160 conference papers with an h-index of 84 based on Google Scholar. He is currently the associate editor of a number of leading IEEE transaction journals.



Carlos Artemio Coello Coello received a PhD in Computer Science from Tulane University (USA) in 1996. His research has mainly focused on the design of new multi-objective optimization algorithms based on bio-inspired metaheuristics (e.g., evolutionary algorithms), which is an area in which he has made pioneering contributions. He currently has more than 600 publications, including more than 200 journal papers and 50 book chapters. His publications currently report over 84,850 citations in Google Scholar (his h-index is 110). He has received several awards, including the National Research Award (in 2007) from the Mexican Academy of Science (in the area of exact sciences), the 2009 Medal to the Scientific Merit from Mexico City's congress and the 2012 National Medal of Science in Physics, Mathematics and Natural Sciences from Mexico's presidency (this is the most important award that a scientist can receive in Mexico). Additionally, he is the recipient of the 2013 IEEE Kiyo Tomiyasu Award, "for pioneering contributions to single- and multiobjective optimization techniques using bioinspired metaheuristics", of the 2016 The World Academy of Sciences (TWAS) Award in “Engineering Sciences”, and of the 2021 IEEE Computational Intelligence Society Evolutionary Computation Pioneer Award. Since January 2011, he is an IEEE Fellow. He is currently the Editor-in-Chief of the IEEE Transactions on Evolutionary Computation. He is Full Professor with distinction (Investigador Cinvestav 3F) at the Computer Science Department of CINVESTAV-IPN in Mexico City, Mexico.



Xun Xu is a leading expert in Smart Manufacturing at the University of Auckland, New Zealand, with over 40 years of experience in the field. His research spans intelligent and interoperable machining systems, cloud-based manufacturing, and smart factories, earning him international recognition.

Dr. Xu has published over 460 research papers and received over 42,000 citations with an h-index of 89 in Google Scholar. He leads the Laboratory for Industry 4.0 Smart Manufacturing Systems (LISMS), New Zealand's only research lab dedicated to Industry 4.0. His current research focuses on smart factories, digital twins, and cloud manufacturing.

A Fellow of the Society of Manufacturing Engineers (SME), American Society of Mechanical Engineers (ASME), and Engineering New Zealand (EngNZ), Dr. Xu was recognized as a Clarivate™ Highly Cited Researcher (2020, 2025) and named among the "20 Most Influential Professors in Smart Manufacturing" by SME. He currently serves on the Executive Committee of the Board of Directors of the North American Manufacturing Research Institution of (NAMRI | SME), and as the Past Chair and Adviser to the NAMRI | SME Scientific Committee. He is a recipient of the 2026 "Research Excellence Medal" from the University of Auckland.



Juergen Branke is Professor of Operational Research and Systems at Warwick Business School, University of Warwick, UK. For almost 30 years, his research has focused on evolutionary and Bayesian optimisation, in particular black-box optimisation under uncertainty: problems that change dynamically over time, problems with noisy evaluations, the search for robust solutions, and optimisation under uncertain user preferences. A recurring theme in his work is the automated design and configuration of decision-making algorithms, using AI to tailor solution strategies to a given problem scenario rather than relying on expert hand-design. He has published over 300 papers in international peer-reviewed journals and conferences.

Juergen is Founding Editor-in-Chief of ACM Transactions on Evolutionary Learning and Optimization, Area Editor of the Journal of Heuristics, and Associate Editor of the Evolutionary Computation journal. He is an IEEE Fellow and a recent recipient of the ACM SIGEVO Outstanding Contribution Award.



Shengxiang Yang (http://www.tech.dmu.ac.uk/~syang/) got his PhD degree from Northeastern University, China in 1999. He is now an IEEE Fellow, a Fellow of the

International Academy of Artificial Intelligence Sciences (AAIS), and a Fellow and Vice President of the Asia Computational Intelligence Society (ACIS). He is a Professor of Computational Intelligence (CI), Director of the Centre for Computational Intelligence and Head of the Innovative Artificial Intelligence Research Cluster within the Digital Future Institute, School of Computer Science and Informatics, De Montfort University, UK. He has worked extensively for many years in the areas of CI methods, including evolutionary computation, artificial neural networks, data mining and data stream analysis, and their applications for real-world problems. He has over 550 publications with an H-index of 83 and over 27,500 citations (Google Scholar). He has appeared in the 2019-2025 Stanford University“World's Top 2% of Scientists List". His work has been supported by UK research councils, EU FP7 and Horizon 2020, and industry partners. He has served as an Associate Editor or Editorial Board Member of over 10 prestigious international journals. He was the founding chair of the Task Force on Intelligent Network Systems (TF-INS, 2012-2017) and the chair of the Task Force on EC in Dynamic and Uncertain Environments (ECiDUEs, 2011-2017) of the IEEE Computational Intelligence Society. He has given around 30 invited keynote speeches and tutorials at international conferences.

Panel Sessions 8

8 月 22 日 14:00-15:45 August 22 14:00-15:45

友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

Directions for Automation Education and Teaching Reform in the Era of Artificial Intelligence

人工智能时代自动化教育教学改革的方向

Panelists: Yaochu Jin (Westlake University, China)

Mingcong Deng (Tokyo University of Agriculture and Technology, Japan)

Xiaoou Li (Cinvestav-IPN, Mexico)

Ziqiang Lang (University of Sheffield, UK)

Zhan Shu (University of Alberta, Canada)

Chair: Qiang Liu (Northeastern University, China)



Yaochu Jin received the BSc, MSc and PhD degrees from the Electrical Engineering Department, Zhejiang University, Hangzhou, China in 1988, 1991 and 1996, respectively. He received the Dr.-Ing. from the Institute of Neuroinformatics, Ruhr University Bochum, Germany in 2001.

He is presently Chair Professor of AI, Head of the Artificial Intelligence Department, Director of the Trustworthy and General AI Laboratory, School of Engineering, Westlake University, Hangzhou, China. Prior to that, he was "Alexander von Humboldt Professor for Artificial Intelligence" endowed by the German Federal Ministry of Education and Research, with the Faculty of Technology, Bielefeld University, Germany from 2021 to 2023, and Surrey Distinguished Chair, Professor in Computational Intelligence, Department of Computer Science, University of Surrey, Guildford, U.K. from 2010 to 2021. He was also "Finland Distinguished Professor" with University of Jyväskylä, Finland, and "Changjiang Distinguished Visiting Professor" with the Northeastern University, China from 2015 to 2017. His current main research interests include trustworthy industrial AI, brain-like embodied intelligence, and AI for arts and sciences.

Prof Jin was the President of the IEEE Computational Intelligence Society and the Editor-in-Chief of IEEE Transactions on Cognitive and Developmental Systems. He is the Editor-in-Chief of Complex & Intelligent Systems. He is the recipient of the 2025 IEEE Frank Rosenblatt Award. He is named "Highly Cited Researcher" by Clarivate from 2019 consecutively. He is a Member of Academia Europaea and Fellow of IEEE.



Mingcong Deng is a Member of the Engineering Academy of Japan, an IEEE Fellow, and a Ph.D. Supervisor at the Tokyo University of Agriculture and Technology, Japan. He received his B.S. degree from the Department of Automatic Control at Northeastern University (formerly Northeast Institute of Technology), his M.S. degree in Automation, and his Ph.D. degree in Systems Science from Kumamoto University, Japan.

He previously served as an Assistant Professor at Kumamoto University, a Research Fellow at the University of Exeter, UK, a Researcher at the Advanced Technology Research Institute of NTT (Nippon Telegraph and Telephone Corporation, ranked 12th in the Fortune Global 500 at that time), and an Associate Professor at Okayama University, Japan.

He currently serves as Chair of the Technical Committee on Networked Sensing and Control, IEEE Systems, Man, and Cybernetics Society; Co-Chair of the Technical Committee on Agricultural Robotics and Automation, IEEE Robotics and Automation Society; and Co-Chair of the Technical Committee on Trustworthy and Controllable Intelligent Systems, IEEE Systems, Man, and Cybernetics Society.

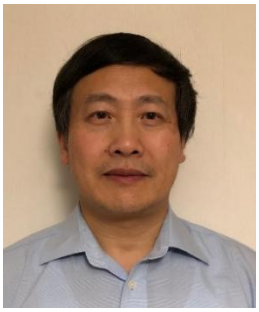
He was an Associate Editor of IEEE Transactions on Automation Science and Engineering, IEEE/CAA Journal of Automatica Sinica, and Editorial Board Member of the Japanese core journals Transactions of the Society of Instrument and Control Engineers and IEEJ Transactions on Electronics, Information and Systems (Section C).
Prof. Deng focuses on nonlinear systems, integrating cutting-edge theory with engineering practice to conduct fundamental and applied research. Addressing the two challenging problems of input-output instability in nonlinear systems and the large learning scale of complex nonlinear systems, he has carried out original fundamental theoretical research, proposed robust operator-based control theory for nonlinear systems and nonlinear system dynamics theory based on multiple AI algorithms and robust filtering, producing a series of internationally influential academic achievements. He has led multiple projects funded by the Japan Society for the Promotion of Science (JSPS) and industrial projects with Japanese enterprises. He has published over 650 academic papers in authoritative journals and conferences in the control field, including 230 international journal papers. He received the IEEE SMC Society Meritorious Service Award twice (2014 and 2019), the 2020 IEEE RAS Most Active Technical Committee Award, and the 2024 IEEE SMC Most Active Technical Committee Award.



Xiaoou Li is a Professor and Director of the Data Science Laboratory in the Department of Computer Science at Cinvestav, Mexico. She received her B.S. degree in Applied Mathematics (1991) and her Ph.D. degree in Automatic Control (1995) from Northeastern University, China. She holds the Level 3 designation in Mexico's National System of Researchers (SNII), is a member of the Mexican Academy of Sciences and is an IEEE Senior Member. Dr. Li has also served as a Senior Research Fellow during sabbatical

leaves at Queen's University Belfast, the University of California, Santa Cruz, Shenzhen University, and Northeastern University.

Her research operates at the intersection of machine learning and system modeling, with core expertise in data-driven sustainable automation, robot-assisted rehabilitation, time series forecasting with incomplete data, AI-empowered education, and neuro-symbolic AI for explainable human-in-the-loop systems. The author of over 300 publications across international journals, books, and proceedings, Dr. Li regularly serves as an international keynote speaker on intelligent systems and AI in pedagogy. Her academic leadership includes serving as General Chair for IEEE ICNSC 2016 and CASE 2022, and as Program Chair for IEEE SSCI 2023 and CASE 2026. She has served on the editorial boards of IEEE Press, Engineering Applications of Artificial Intelligence (EAAI), IEEE Transactions on Automation Science and Engineering (T-ASE), and IEEE/CAA Journal of Automatica Sinica (JAS), as well as on the IEEE James H. Mulligan, Jr. Education Medal Committee.



Ziqiang Lang is Chair Professor of Complex Systems Analysis and Design in the School of Electrical and Electronic Engineering at the University of Sheffield, UK. His research advances the theory and methodology of nonlinear system modelling, analysis, and design, signal processing, digital twins, and physically interpretable machine learning. He has extensive interdisciplinary experience in translating these theoretical and methodological advances into practical solutions across a wide range of scientific and engineering applications, including engineering and infrastructure system health monitoring and fault diagnosis, advanced manufacturing, and medical diagnosis. By integrating fundamental systems theory with data-driven approaches, his work has developed novel and principled frameworks for the modelling, analysis, and intelligent decision-making of complex systems across diverse scientific and engineering domains.

He has authored a research monograph, published more than 160 peer-reviewed journal articles, and secured three patents arising from the innovative application of his theoretical and methodological contributions. His research impact has been internationally recognised, with ScholarGPS placing him among the top 0.5% of researchers worldwide in both nonlinear systems and vibration studies. He has also been recognised in the Elsevier–Stanford University ranking of the world's top 2% of scientists, reflecting the sustained influence and global reach of his scholarly contributions.

As Principal Investigator, he has successfully led £3.5 million of cross-disciplinary research projects funded by the UK Engineering and Physical Sciences Research Council (EPSRC). Through these projects, he has pioneered the

integration of nonlinear system modelling, analysis, and design with physically interpretable machine learning, translating fundamental advances into creative solutions for complex challenges spanning many scientific and engineering disciplines.

He is the originator of the concept of Nonlinear Output Frequency Response Functions (NOFRFs), a groundbreaking framework that extends the classical linear Frequency Response Function (FRF) methodology to nonlinear systems in a practically implementable form. The NOFRFs framework has been widely adopted by researchers and industry practitioners internationally for the analysis and diagnosis of complex nonlinear systems in numerous fields of science and engineering. This pioneering work was recognised by the UK Engineering and Physical Sciences Research Council (EPSRC), which assessed the related research project as "outstanding" and "internationally leading".



Zhan Shu received his B.Eng. degree in Automation from Huazhong University of Science and Technology in 2003, and his Ph.D. degree in Control Engineering from The University of Hong Kong in 2008. He is currently a Professor in the Department of Electrical and Computer Engineering at the University of Alberta, Canada. Prior to his current appointment, he served as a Lecturer at the University of Southampton, UK, and a Postdoctoral Fellow at the National University of Ireland, Maynooth. His broad research interests encompass networked and distributed control, hybrid systems, robust control, and reinforcement learning, with practical applications in data networks, power electronics, building systems, and biological systems. Dr. Shu's research has been supported by various major grants where he served as Principal Investigator, including those from NSERC and the University of Alberta-Huawei Joint Innovation Collaboration. He has been recognized with multiple honors, such as the Best Paper Award at the 37th International Conference on Information Networking in 2023 and the Kan Tong Po International Fellowship from the Royal Society in 2019. Recognized as a top Electronics and Electrical Engineering Scientist by Research.com, he is a Senior Member of the IEEE and a Fellow of the Higher Education Academy. Actively contributing to the academic community, Dr. Shu serves as an Associate Editor for several prestigious journals, including the IEEE Transactions on Automatic Control, IET Control Theory and Applications, and the Journal of The Franklin Institute.

大会报告 (Plenary Lectures)

Plenary Lecture 1

8 月 21 日 09:00-09:45 | August 21 09:00-09:45

友谊宫 辽宁厅 B | Friendship Palace, Liaoning Hall B

Yu Sun

University of Toronto, Canada

Next-Generation AI and Robotics: Data Driven vs. Physics Model Driven & Their Symbiosis

Chair: Yongduan Song (Lingnan University, Hong Kong, China / Chongqing University, China)

Abstract: Artificial intelligence and robotics are developing rapidly at an unprecedented pace, with digital and physical worlds becoming closely connected through embodied AI technology. This presentation will (1) use specific case studies to explain the similarities, differences, and complementarities between data-driven and model-driven approaches; (2) explore the evolutionary relationship between traditional robotics and embodied AI systems; and (3) introduce the critical role of robotics in precision manufacturing and surgery.



Yu Sun is an International Member of both the Chinese Academy of Engineering and the U.S. National Academy of Engineering. He is also a Fellow of the Royal Society of Canada, the Canadian Academy of Engineering, and the Canadian Academy of Health Sciences. He was the founding Director of the Robotics Institute at the University of Toronto. His research focuses on precision robotics and embodied intelligent systems. He was elected as a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), the American Society of Mechanical Engineers (ASME), the American Association for the Advancement of Science (AAAS), the National Academy of Inventors (NAI), the American Institute for Medical and Biological Engineering (AIMBE), the Canadian Society for Mechanical Engineering (CSME), and the Engineering Institute of Canada (EIC). Among the awards he received include an NSERC E.W.R. Steacie Memorial Fellowship, an NSERC Synergy Award for Innovation, the IEEE EMBS Technical Achievement Award, IEEE McNaughton Gold Medal, and the IEEE Pioneer Award in Nanotechnology. He currently serves as the Editor-in-Chief of IEEE Transactions on Automation Science and Engineering and is a member of the Advisory Board for the AAAS journal, Science Robotics.

Plenary Lecture 2

8 月 21 日 10:00-10:45	August 21 10:00-10:45
友谊宫 辽宁厅 B	Friendship Palace, Liaoning Hall B

Witold Pedrycz

University of Alberta, Canada

Informed Machine Learning: Emerging Opportunities and Industrial Perspectives

Chair: Jun Fu (Northeastern University, China)

Abstract: Machine Learning (ML) and Artificial Intelligence (AI) have enjoyed a lot of interest and led to numerous success stories including those in areas of high criticality. With the passage of time, some limitations of the ML technology have become visible and raised concerns about the deployment of the ML constructs (including LLMs) and their exclusive reliance on data. Indeed, data are a lifeblood of design methodologies and drive current commonly encountered development practices. At the center of the ML methodology lies a default assumption that the data fully represent the problem to be solved (e.g., classification or prediction). We look at the problem and produce a solution through the lens of data; in many cases, this may lead to the data blinding effect. We advocate that a holistic knowledge-data development perspective is urgently needed. An Informed ML (IML) has emerged as a new direction of research addressing these needs. In brief, IML is sought as a methodology in which data and knowledge are used in unison to design ML systems. From the design perspective encountered in the ML learning environment, data and knowledge are radically different. Data are numeric and precise. Knowledge is general and usually expressed at the higher level of abstraction (generality). Knowledge and data emerge at different levels of information granularity.In this talk, we deliver a comprehensive taxonomy of main pursuits of IML and link them with key ways the knowledge is represented. A historical perspective is offered by studying the symbolic and subsymbolic processing encountered in successive decades of AI. The two general categories of physics-oriented and neuro-symbolic constructs associated with the ways in which knowledge and data are explored together. We elaborate on the design process being guided by a prudently augmented additive loss function whose corresponding parts minimize distances between the developed ML model and numeric target values and deliver adherence of the model to information granules reflecting available knowledge. A general taxonomy of neuro-symbolic systems involving: learning-for-reasoning, reasoning-for-learning, reasoning-learning is discussed.



Witold Pedrycz (IEEE Life Fellow) is Professor in the Department of Electrical and Computer Engineering, University of Alberta, Edmonton, Canada. He is also with the Systems Research Institute of the Polish Academy of Sciences, Warsaw, Poland. Dr. Pedrycz is a foreign member of the Polish Academy of Sciences and a Fellow of the Royal Society of Canada. He is a recipient of several awards including Norbert Wiener award from the IEEE Systems, Man, and Cybernetics Society, IEEE Canada Computer Engineering Medal, a Cajastur Prize for Soft Computing from the European Centre for Soft Computing, a Killam Prize, a Fuzzy Pioneer Award from the IEEE Computational Intelligence Society, and Meritorious Service Award from the IEEE Systems Man and Cybernetics Society.His main research directions involve Computational Intelligence, Granular Computing, and Informed Machine Learning. Professor Pedrycz serves as an Editor-in-Chief of WIREs Data Mining and Knowledge Discovery (Wiley).

Plenary Lecture 3

8 月 21 日 10:45-11:30	August 21 10:45-11:30
友谊宫 辽宁厅 B	Friendship Palace, Liaoning Hall B

Max Q.-H. Meng

Southern University of Science and Technology, China

Why LLM + Humanoid Robots Not Working Yet?

Chair: Bin Jiang (Nanjing University of Aeronautics and Astronautics, China)

Abstract: At the forefront of artificial intelligence and bionic robotics, why are "large models" + bionic robots still inadequate and unable to be effectively implemented? Based on the speaker's 40 years of experience in innovation in this field and their learning insights, this lecture revisits past knowledge to explore the current challenges and obstacles facing artificial intelligence, as well as how to make the best use of the significant benefits offered by artificial intelligence and bionic robots. It then looks forward to the future trends in the development of intelligent robots, as well as opportunities for innovation and strategic tactics.



Max Q.-H. Meng is Chair Professor and Head of EEE at SUSTech, Fellow of CAE and IEEE. Formerly a tenured professor at the University of Alberta and head of EE at CUHK, he specializes in robotics perception and intelligence. Ranked in the global top 2% of scientists by Stanford, he has published over 1,000 papers, holds 40+ patents, and won 30+ awards, including the IROS Harashima Award. He has led 60+ research projects (¥100M+), delivered 200+ keynotes, and serves as editor for leading journals, including founding Editor-in-Chief of Biomimetic Intelligence and Robotics. He chaired IEEE/RSJ IROS 2005 and IEEE ICRA 2021.

Plenary Lecture 4

8 月 22 日 08:30-09:15 August 22 08:30-09:15

友谊宫 辽宁厅 B Friendship Palace, Liaoning Hall B

Jie Huang

The Chinese University of Hong Kong, China

Data-Driven Output-Feedback Control for Unknown Linear Systems: Stabilization and Output Regulation

Chair: Tengfei Liu (Northeastern University, China)

Abstract: Dynamic programming is a powerful approach to addressing a wide range of optimal control problems. While the classical dynamic programming approach requires an exact system model, real-world systems are inherently uncertain. To directly address significant model uncertainty, researchers from both the control and machine learning communities have cooperated since the 1970s to integrate dynamic programming with reinforcement learning, leading to an effective, data-driven approach known as adaptive dynamic programming (ADP) for designing control laws for unknown linear systems. The ADP method was initially developed for unknown discrete-time systems and was later extended to unknown continuous-time systems by utilizing the integral version of reinforcement learning. This approach has been successfully applied to the linear quadratic regulator problem and the output regulation problem of unknown linear continuous-time systems. However, the ADP method was originally constrained to the state-feedback form. In this talk, we first introduce a framework that converts the output-feedback stabilization problem of an unknown plant into a state-feedback stabilization problem for an auxiliary system, which is composed of the original plant and a model-free observer. This leads to a systematic approach for synthesizing an output-feedback stabilizing control law using only the plant's input-output data. Then, by incorporating the internal model, we extend this framework to solve the output-feedback output regulation problem.



Jie Huang completed his Ph.D. in automatic control at Johns Hopkins University in 1990. After a year at Johns Hopkins University as a postdoctoral fellow and four years in industry in the USA, he joined the Department of Mechanical and Automation Engineering at the Chinese University of Hong Kong (CUHK) in September 1995, and is now Choh-Ming Li Research Professor of Mechanical and Automation, CUHK. His research interests include nonlinear control, data-driven control, networked multi-agent systems, game theory, and guidance and control of flight vehicles. He is a life fellow of IEEE, fellow of IFAC, CAA, HKIE and an International Member of the Chinese Academy of Engineering.

Instructions for Presenters & Session Chairs

1. Oral Presentations

The allocated time for the talks is as follows:

Type	Presentation	Discussion
Plenary	40 minutes	5 minutes
Regular	12 minutes	3 minutes

A laptop will be available for presentations with MS-Office PowerPoint or Adobe Acrobat formats. Presenters should transfer their files to the laptop at the venue of their presentation as early as possible. Preferable times are during coffee, lunch and inter-session breaks. A student volunteer will be available to assist the presenters. Presenters are requested to submit a short biography to the Session Chair, 5 minutes before the beginning of the session. The biography should include at least your title, name and affiliation.

2. Poster Presentations

The poster should be in portrait layout and A1 size (594mm (W) x 841mm (H) /23.3in (W) x 35in (H)). Posters should be put up by 1:30 PM on the presentation day and removed right after the session ends. Board pins and Velcro tape will be available on-site. Posters are to be put up according to the numbering on the poster panels. Authors should be present during the poster session to explain their work and to interact with fellow attendees.

3. Session Chairs

Please take note of the day/time/venue of the session that you are chairing in the program booklet. On the day of the session that you are chairing, obtain any changes to the program from the Secretariat at the Registration Desk.

Before the start of the session, collect the biographical information of the presenting authors. Use this information to introduce the speaker before his/her presentation. Be present in the room where the session is to be held 10 minutes before the start of the session and check that all the presentations have been copied on the notebook provided at the venue. Remind the presenting author about the time available for their presentation; see “Instructions to Authors” for details. Remind the authors at the 2-minute mark (e.g., at the 15th minute of presentation for regular presentations) to make their concluding remarks. Please ensure that there is sufficient time for discussion.

In case of “no-show” or if a talk ends early, do not advance the presentations. The additional time can be used for discussions related to papers presented earlier in the

session.

Local Attractions

SHENYANG, CHINA

Shenyang is the largest city of Northeast China and the economic and cultural center of Liaoning Province. It has the largest airport in the northeastern region of China, with direct flights to over 120 domestic cities and 20 flights to major Asian cities. Tourist sites include the Imperial Palace, East Mausoleum, North Mausoleum, Nanguan Catholic Church, Benxi Water Cave, and the Marshal's Mansion. More information about Shenyang can be found at https://en.wikipedia.org/wiki/Shenyang or http://www.chinahighlights.com/shenyang/.

1. Shenyang Imperial Palace

While less well known than the Forbidden City of Beijing, Shenyang's Imperial Palace was built by the first Qing Emperor in 1625. During the Manchu reign of the Qing Dynasty, Shenyang became the political and cultural center of all China. It is one of Shenyang's three UNESCO World Heritage Sites.



2. Beiling Park

The largest and most beautiful park in Shenyang is Beiling ('North Hill') Park. With a fee of only 6 CNY, it's well worth the price of admission. Ancient Chinese gardens, pristine lakes filled with pink lotus, and plenty of space for outdoor activities makes the park a popular place to spend the afternoon in Shenyang.



3. Commander Mansion

Commander Zhang's Mansion is the official residence and private residence of Zhang Zuolin and his eldest son, Zhang Xueliang. It is the best-preserved celebrity residence in the Northeast. It was built in the third year of the Republic of China (1914), with a total area of 36,000 square meters and a total construction area of 27,600 square meters. Each building has different styles, including Chinese traditional, Chinese and Western, Roman, Nordic, and Japanese. The main attractions are Daqing Building, Xiaoqing Building, Xilou Red House Group and Miss Zhao Si Building.



4. Shenyang Strange Slope

Strange Slope Scenic Area is located in the Shenbei District in Shanyang. This place is famous for its strange slope. This slope is in an 80 meters length and 15 meter width. It was discovered in April 1990.


胜 城
沈阳怪坡留念
Bai百科

Sponsors

IAI 2026 is sponsored by Northeastern University, China, State Key Laboratory of Synthetical Automation for Process Industries (SAPI), Control Engineering of China and Shenyang Association for Association for Science and Technology, and technically co-sponsored by IEEE Industrial Electronics Society.

Institute of Electrical and Electronics Engineers

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Northeastern University, China

State Key Laboratory of Synthetical Automation for Process Industries (SAPI)

Control Engineering of China

Shenyang Association for Science and Technology

Technical Program

Program at a Glance

FAI 2026 Technical Program Wednesday August 19, 2026

08:30-10:15 WePLP

Onsite Location: Friendship Palace, Liaoning Hall B

Plenary Panel Discussion: Enhancing Young Scholars' Academic Writing Skills and Journal Service Capabilities

Panelists: S. Joe Qin; Peng Shi; Xin Yao; Guoxiang Gu; Ling Shi

Chair: Yuzhe Li

10:15-10:30 WeCMP

Friendship Palace, Liaoning Hall B

Coffee Break

10:30-12:15 WePLP

Onsite Location: Friendship Palace, Liaoning Hall B

Plenary Panel Discussion: New Intersections Between Control Theory and Intelligent Theory in the Era of Artificial Intelligence

Panelists: Zhong-Ping Jiang; Derong Liu; Ye-hwa Chen; Tingwen Huang; Qichun Zhang

Chair: Tengfei Liu

12:30-14:00 WeLP

Lunch

14:30-16:15 WePLP

Onsite Location: Friendship Palace, Liaoning Hall B

Plenary Panel Discussion: Frontier and Emerging Trends in Artificial Intelligence and Robotics−Part 1

Panelists: Max Q.-H. Meng; Simon X. Yang; Mengjie Zhang; Qingguo Wang; Zhibo Pang

Chair: Jiayue Sun

17:30-20:00 WeDP

Dinner

FAI 2026 Technical Program Thursday August 20, 2026

08:30-10:15 ThPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Panel Discussion: Frontier and Emerging Trends in Artificial Intelligence and Robotics−Part 2 Panelists: Ren C. Luo; Chun-Yi Su; Xin Xin; Wenfang Xie Chair: Zhi Li
10:15-10:30 ThCMP Friendship Palace, Liaoning Hall B Coffee Break
10:30-12:15 ThPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Panel Discussion: Technological Development Trends and Future Forms of Unmanned Systems Panelists: Yang Shi; Ben M. Chen; Wenhua Chen; Jinjun Shan; Wen Yu Chair: Dongsheng Yang
12:30-14:00 ThLP Lunch
14:30-16:15 ThPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Panel Discussion: How to Facilitate the Two-Way Flow Between Research Innovation and Practical Applications Panelists: Zheng Hong (George) Zhu; Furong Gao; Chengbin Chu; Kang Li; Xiang Li Chair: Ping Zhou
18:00-20:00 ThBP Receiption
Technical Program ## Program at a Glance **IAI 2026 Technical Program Friday August 21, 2026**
8:30-9:00 Opening Ceremony Onsite Location: Friendship Palace, Liaoning Hall B

Chair: Zhan Shu
9:00-9:45 FrPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Speaker: Yu Sun Chair: Yongduan Song
09:45-10:00 FrCMP Friendship Palace, Liaoning Hall B Coffee Break
10:00-10:45 FrPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Speaker: Witold Pedrycz Chair: Jun Fu
10:45-11:30 FrPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Speaker: Max Q.-H. Meng Chair: Bin Jiang
12:00-13:30 FrLP Lunch
14:00-15:45 FrPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Panel Discussion: How to Effectively Integrate Artificial Intelligence with Automation Science Panelists: Yongduan Song, Carlos A. Coello Coello, Kwong Sam Tak Wu, Xun Xu, Juergen Branke, Shengxiang Yang Chair: Weinan Gao
15:45-16:00 FrCMP Friendship Palace, Liaoning Hall B

Coffee Break			
16:00-17:30 FrA1 Onsite Location: Friendship Palace, Shanhai Hall Award Session-I Chair: Ben M. Chen	16:00-17:30 FrA2 Onsite Location: Friendship Palace, Qianshan Hall Award Session-II Chair: Tengfei Liu	16:00-17:30 FrA3 Onsite Location: Friendship Palace, Jiuyuan Hall Control for Embodied Intelligent Robotic Systems Chair: Zhi Li	16:00-17:30 FrA4 Onsite Location: Friendship Palace, Friendship Hall Resilient and Trustworthy Intelligence: Optimization, Learning, and Assurance for Safety-Critical Systems Chair: Ran Chen; Fuyi Qu; Yuzhe Li
			15:10-16:40 FrP Onsite Location: Friendship Palace AI-Driven Cooperative Autonomous Control Chair: Jinxi Zhang
IAI 2026 Technical Program Saturday August 22, 2026			
08:30-09:15 SaPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Speaker: Jie Huang Chair: Tengfei Liu			
09:20-10:50 SaM1 Onsite Location: Friendship Palace, Shanhai Hall Computer Vision, Learning, and Decision Systems for Industry Chair: Gaochang Wu; Xiang Li; Shengping YU	09:20-10:50 SaM2 Onsite Location: Friendship Palace, Qianshan Hall Intelligent Learning and Feedback Conference Chair: Qiang Zhang; Weinan Gao; Jing Tang; Yuan Yuan	09:20-10:50 SaM3 Onsite Location: Friendship Palace, Jiuyuan Hall Industrial Process Intelligence operation control and data analysis Chair: Wei Dai; Yan Qin; Xu Dezhi	09:20-10:50 SaM4 Onsite Location: Friendship Palace, Friendship Hall Networked Multi-Agent Systems: Control, Optimization, and Learning Chair: Tao Yang; Guanghui Wen; Xinlei Yi; Lei Xu; Kunpeng Zhang

10:50-11:00 SaCMP Friendship Palace, Liaoning Hall B Coffee Break			
11:00-12:30 SaM5 Onsite Location: Friendship Palace, Shanhai Hall Process industry embodied intelligence (PIEI) for municipal solid waste incineration (MSWI) Chair: Wen Yu; Jian Tang	11:00-12:30 SaM6 Onsite Location: Friendship Palace, Qianshan Hall Embodied AI and Cloud Fog Automation for Industrial Cyber Physical Systems Chair: Zhibo Pang; Yinlong Zhang; Le Zhang; qi wang; Ke Wang; Xiaolin Jiang	11:00-12:30 SaM7 Onsite Location: Friendship Palace, Jiuyuan Hall Advanced Intelligent Systems and Applications Chair: Wen-Fang Xie; Xin Ma; Yongming Li	11:00-12:30 SaM8 Onsite Location: Friendship Palace, Friendship Hall Intelligent Perception, Detection and Diagnosis Chair: Yunfei Yin; Zejiao Dong; Chunhui Zhao
12:30-14:00 SaLP Lunch			
14:00-15:45 SaPLP Onsite Location: Friendship Palace, Liaoning Hall B Plenary Panel Discussion: Directions for Automation Education and Teaching Reform in the Era of Artificial Intelligence Panelists: Yaochu Jin, Mingcong Deng, Xiaoou Li, Ziqiang Lang, Zhan Shu Chair: Qiang Liu			
15:45-16:00 SaCMP Friendship Palace, Liaoning Hall B Coffee Break			
16:00-17:30 SaA1 Onsite Location: Friendship Palace, Shanhai Hall Data-Driven Modeling and Intelligent Analytics Chair: Yan-Lin He; Qunxiong Zhu;	16:00-17:30 SaA2 Onsite Location: Friendship Palace, Qianshan Hall Physics-Informed Learning and Intelligent Diagnosis Chair: Han Liu; Xinghua Liu; Youqing Wang	16:00-17:30 SaA3 Onsite Location: Friendship Palace, Jiuyuan Hall Advanced Methods for Industrial Monitoring and Optimization Chair: Jiusun Zeng; Shaowen LU; Fang	16:00-17:30 SaA4 Onsite Location: Friendship Palace, Friendship Hall Machine Learning Methods and Engineering Applications Chair: Wen-Fang Xie; Hai Yang;

Liangyong Wang		Ye	Weiyan Hou
18:00-21:00 SaRP Friendship Palace, Liaoning Hall A Banquet & Award			

Content List

Technical Program for Friday August 21, 2026

FrA1 Friendship Palace, Shanhai Hall

Award Session-I (Oral Session)

Chair: Chen Ben M. — Chinese Univ. of Hong Kong, China.

16:00-16:15 FrA1.1

Research on Adaptive Trajectory Optimization Algorithm for Robots Based on Process Neural Network

Zhu, Hong — Liao Ning Equipment Manufacturing College of Vocational Technology

Yang, Hai — Shenyang Institute of Technology

16:15-16:30 FrA1.2

Trajectory Tracking Control for Vehicles on Low-Friction Roads Using Radial Basis Function-Enhanced Sliding Mode Control

Dai, Chengyang — Harbin Institute of Technology

Yin, Yunfei — Harbin Institute of Technology

Xu, Zhanguo — Harbin Institute of Technology

Ji, Yue — Harbin Institute of Technology

Abaho G. Gershome — Univ. of Rwanda

Dong, Zejiao — Harbin Institute of Technology

16:30-16:45 FrA1.3

Trace-Weighted Event-Triggered Mean Fusion for Efficient Multi-Robot Source Seeking

Li, Donglin — The Univ. of Manchester

Li, Zhongguo — Southeast Univ.

Wang, Junan — The Univ. of Manchester

Ma, Hanbo — The Univ. of Manchester

Ding, Zhengtao — The Univ. of Manchester

16:45-17:00 FrA1.4

Causality-Driven GNN for Industrial Fault Diagnosis based on Discovering Invariant Rationales

Ge, Lin — China Univ. of Mining and Technology

Zhang, Xiangrui — China Univ. of Mining and Technology

Gong, Zhuoyan — China Univ. of Mining and Technology

Dai, Wei — China Univ. of Mining and Technology

17:00-17:15 FrA1.5

Two-Stage Robust Unit Commitment Strategy for Addressing Sandstorm-Induced Renewable Energy Generation Uncertainties

Shi, Gaofei — Xi'an Univ. of Technology

Liu, Xinghua — Xi'an Univ. of Technology

Yang, Xiang — Xi'an Univ. of Technology

Wang, Rui — Northeastern Univ.

Yan, Huaicheng — Shanghai Univ. of Electric Power

Xiao, Gaoxi — Nanyang Technological Univ.

17:15-17:30 FrA1.6

A Lightweight Visual Detection Framework for Cherry Tomato Grasping with a Robotic Manipulator

Gao, Shengda — Ritsumeikan Univ.

Su, Zhenling — Ritsumeikan Univ.

Deng, Mingcong — Tokyo Univ. of Agriculture and Technology

Meng, Lin — Ritsumeikan Univ.

FrA2 Friendship Palace, Qianshan Hall

Award Session-II (Oral Session)

Chair: Liu, Tengfei — Northeastern Univ.

16:00-16:15 FrA2.1

Reinforcement learning based model predictive tracking control for multi-rate nonlinear systems

Meng, Da — China Univ. of Mining Technology

Yang, Yizhuo — China Univ. of Mining Technology

Dai, Wei — China Univ. of Mining Technology

16:15-16:30 FrA2.2

Vision-Based Spatio-Temporal Convolutional Load Forecasting for Battery Pack Balancing in Electric Vehicles

Li, Kang — Univ. of Leeds

Han, Xiaofei — Univ. of Leeds

16:30-16:45 FrA2.3

Condition-Aware Multimodal Solar Irradiance Forecasting via Multi-View Clustering and Mixture-of-Experts

Zhang, Jingxin — Southeast Univ.

Han, Mengti — Southeast Univ.

16:45-17:00 FrA2.4

Adaptive Optimal Control of Discrete-Time Systems With Both Feedback and Input Time-Delays Based on Reinforcement Learning

Jiao, Chenxiang — Huazhong Univ. of Science and Technology

Jiang, Yi — Huazhong Univ. of Science and Technology

Zhou, Ping — Northeastern Univ.

17:00-17:15 FrA2.5

HCCE-GeoCascade: Frequency-Decomposed and Geometry-Constrained Dual-Surface Learning for 6D Pose Estimation

Wang, Lei — Beihang Univ.

Chen, Lijia — Beihang Univ.

17:15-17:30 FrA2.6

Topology-Aware Standalone Monitoring and Inversion Software Framework for Multisensor Perception and Flow-Regime Recognition in Offshore Wells

Cao, Kaibin — Tianjin Univ.

Zuo, Kai — CNOOC Energy Technology & Services Limited Key Laboratory for Offshore Completion / CNOOC Ener Tech-Drilling & Production Co.

Liang, Guanghui	Tianjin Univ.
Li, Qingtao	CNOOC Energy Technology & Services Limited Key Laboratory for Offshore Completion / CNOOC Ener Tech-Drilling & Production Co.
Liu, Jingchao	CNOOC Energy Technology & Services Limited Key Laboratory for Offshore Completion / CNOOC Ener Tech-Drilling & Production Co.
Tan, Chao	Tianjin Univ.

FrA3 Friendship Palace, Jiuyuan Hall

Control for Embodied Intelligent Robotic Systems (Oral Session)

Chair: Li, Zhi	Northeastern Univ.

16:00-16:15 FrA3.1

Cooperative Adaptive Optimal Output Regulation for Embodied Intelligent Robotic Systems

Dong, Yuchen	Northeastern Univ.
Gao, Yuchen	Northeastern Univ.

16:15-16:30 FrA3.2

Learning-Based Mean Field Game Control for Embodied Intelligent Robot Systems

Liu, Yiheng	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

16:30-16:45 FrA3.3

Learning-Based Control for Embodied Intelligent Robotic Systems

He, Kaiyue	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

16:45-17:00 FrA3.4

Hybrid 1D-CNN/GRU Model-Driven Continuous Prediction of Driver Fatigue Based on Eye Movement

Jin,Yuhan	Northeastern Univ.
Huang, Shijie	Northeastern Univ.
Sun,Yuhang	Northeastern Univ.
Gao,Weinan	Northeastern Univ.

17:00-17:15 FrA3.5

Anomaly Monitoring Analysis based on Multi-Block Latent Variables for Multi-Point Temperature of Municipal Solid Waste Incineration Process

Yi, Wei	Beijing Univ. of Technology
Tang, Jian	Beijing Univ. of Technology
Pi, Meng	Beijing Chaoyang Environment Group Co. LTD

17:15-17:30 FrA3.6

Dioxin Concentration Numerical Simulation under Benchmark Operating Condition for a New Municipal Solid Waste Incineration Flow Process

Liu, Yequn	Beijing University of Technolog / Beijing Laboratory of Smart Environmental Protection
Tang, Jian	Beijing University of Technolog / Beijing Laboratory of Smart Environmental Protection
Qian, Yu	Zhongguancun Zhiyong Artificial Intelligence Research Institute

FrA4 Friendship Palace, Friendship Hall

Resilient and Trustworthy Intelligence: Optimization, Learning, and Assurance for Safety-Critical Systems (Oral Session)

Chair: Chen, Ran	Northeastern Univ.
Co-Chair: Qu, Fuyi	Shenyang Ligong Univ.
Co-Chair: Li, Yuzhe	Northeastern Univ.

16:00-16:15 FrA4.1

SCoPE: A Prompting Framework for Chemical Information Extraction

Wang, Nan	Jiangnan Univ.
Xu, Junjie	Jiangnan Univ.
Zhang, Jianqiang	Jiangnan Univ.
Ni, Yuqing	Jiangnan Univ.

16:15-16:30 FrA4.2

Efficient Event-Triggered Tube Model Predictive Control for Safety-Aware Aero-Engine Operation

Huo, Kaixuani	Northeastern Univ.
Li, Yuzhe	Northeastern Univ.

16:30-16:45 FrA4.3

Event-Triggered Active Disturbance Rejection Control for Switched Nonlinear Systems

Zhang, Simeng	Northeastern Univ.
Li, Yuzhe	Northeastern Univ.

16:45-17:00 FrA4.4

Stabilization of Sampled-data Networked Control Systems Subject to Multiple Delays and Intermittent Observation

Sui, Haoting	Northeastern Univ.
Li, Yuzhe	Northeastern Univ.

17:00-17:15 FrA4.5

Generalized Optimal Attacks with Unparameterized Patterns on Remote Estimation

Xu, Haoyuan	Northeastern Univ.
Li, Yuzhe	Northeastern Univ.

17:15-17:30 FrA4.6

Federated Digital Twin Framework for Real-Time Industrial Fault Detection

Sayor Ajfar Aaron	Canadian Univ. Of Bangladesh
Nazmul Ahosan	Canadian Univ. Of Bangladesh
Sajjat Hossain Abir	Canadian Univ. Of Bangladesh
Ashif Newaz	Canadian Univ. Of Bangladesh
Md. Mushfiqur Rahman	Canadian Univ. Of Bangladesh
Md Monir Hossain	Canadian Univ. Of Bangladesh

FrP Friendship Palace

AI-Driven Cooperative Autonomous Control

Chair: Zhang, Jinxi	Northeastern Univ.

16:00-17:30 FrP1

H_∞Control Based on LMIs for a Class of Time-delay Switched Systems

Zhang, Yinxue	Daqing Oilfield Design

	Institute Co., Ltd

16:00-17:30	FrP2

A recursive time delay estimation algorithm for FIR models

Jing, Shaoxue	Huaiyin Normal Univ.
Jin, Jianquan	Huaiyin Normal Univ.

16:00-17:30	FrP3

Distributed Nonsmooth Social Cost Minimization with Globally Coupled Constraints for Second-Order Systems

Huang, Hao	Northeastern Univ.
Li, Yangchen	Northeastern Univ.
Sun, Shuo	Northeastern Univ.
Li, Fan	Northeastern Univ.
Zhang, Kunpeng	Northeastern Univ.
Xu, Lei	KTH Royal Institute of Technology
Yang, Tao	Northeastern Univ.

16:00-17:30	FrP4

A Deployment-Oriented Comparative Study of General-Purpose Detectors for Chronic Atrophic Gastritis Screening in Low-Resource Endoscopy

Wu, Jianguo	Affiliated Hospital of Hebei Univ.
Wang, Yangyang	Affiliated Hospital of Hebei Univ.
Liu, Peng	Affiliated Hospital of Hebei Univ.

16:00-17:30	FrP5

NO_x emissions prediction model based on BiGRU with temporal feature enhancement and physics-informed neural network constraints

Wang, Yanbo	State Grid Liaoning Electric Power Co., Ltd
Wang, Aohan	State Grid Liaoning Electric Power Co., Ltd
Yu, Yangzi	State Grid Liaoning Electric Power Co., Ltd.
Wei, Chongyang	Shenyang Institute of Engineering
Pang, Xinfu	Shenyang Institute of Engineering
Liu, Wei	Shenyang Institute of Engineering

16:00-17:30	FrP6

HOA-VMD-CNN-iTransformer-LSTM for short-term wind power forecasting

Wang, Aohan	State Grid Liaoning Electric Power Co., Ltd
Wang, Yanbo	State Grid Liaoning Electric Power Co., Ltd
Liu, Siyan	State Grid Liaoning Electric Power Co., Ltd
Chen, Huanjun	Shenyang Institute of Engineering
Pang, Xinfu	Shenyang Institute of Engineering
Liu, Wei	Shenyang Institute of Engineering

16:00-17:30	FrP7

UAV Swarm Path Planning Using an Enhanced Particle Swarm Optimization Algorithm with Adaptive Inertia Weight and Dynamic Learning Factors

Yang, Juan	Shenyang Aerospace Univ.
Liu, Dong	Shenyang Aerospace Univ.
Wang, Zhenwei	Shenyang Aerospace Univ.

16:00-17:30	FrP8

Grey Wolf Optimizer-Assisted Model Predictive Control for Pulsed-Load Energy Management of Aircraft Hybrid Energy Storage Systems

Zhang, Jianyu	Univ. of Leeds
Li, Kang	Univ. of Leeds

16:00-17:30	FrP9

Output-Feedback Adaptive Optimal Control of Continuous-Time Systems via Modulation Function Method: A Policy Iteration Approach

Liang, Xue	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

16:00-17:30	FrP10

Learning-based Multi-Objective Adaptive Optimal Output Regulation of Linear Systems

Xu, Kuang	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

16:00-17:30	FrP11

Data-Driven Shared Steering Control for Human-in-the-Loop Four-Wheel-Steering Vehicles

Yang, Bowei	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

16:00-17:30	FrP12

End-to-End Predictive Cruise Control of Connected and Autonomous Vehicles via Distributed Model Predictive Control

Li, Jiaze	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

16:00-17:30	FrP13

Output-Feedback Optimal Control for Preventing Hypotension in Labor Epidural Anesthesia

Yang, Zijian	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

16:00-17:30	FrP14

Constraint-Aware Self-Optimized Multi-Focus Image Fusion for Liquid Tunable Lens Imaging

Duan, Zenghong	Northeastern Univ.
Li, Zhi	Northeastern Univ.

16:00-17:30	FrP15

Distributed Predefined-Time Output Optimal Resource Allocation Control for Heterogeneous Linear Multiagent Systems With Time-Varying Costs

Ding, Mei	Northeastern Univ.
Lu, Shaowen	Northeastern Univ.

16:00-17:30	FrP16

Quality Supervision of Equipment Development Project Consortia Under the Primary Responsibility System of Engineering Quality of Prime Contractors

Han, Baodong	
Zhang, Fan	
Hu, Bin	

16:00-17:30	FrP17

Adaptive Optimal Output Feedback Control for Nonzero-Sum Differential Game Systems Based on Reinforcement Learning

Zhang, Li	Northeastern Univ.
Fan, Jialu	Northeastern Univ.
Chai, Tianyou	Northeastern Univ.

16:00-17:30	FrP18

Early Gas Kick Risk Monitoring Through Temporal Shapelet Learning and Adversarial Sample Enhancement

Li, Qihao	China Univ. of Petroleum (Beijing)
Wei, Yuansen	China Univ. of Petroleum (Beijing)
Zhu, Zhaopeng	China Univ. of Petroleum (Beijing)
Zhou, Detao	China Univ. of Petroleum (Beijing)
Zhang, Chengkai	China Univ. of Petroleum (Beijing)
Song, Xianzhi	China Univ. of Petroleum (Beijing)
Zhou, Chenzhan	China Univ. of Petroleum (Beijing)

16:00-17:30	FrP19

Intelligent Drilling Parameter Optimization Based on RF-Constrained Reinforcement Learning

Li, Qihao	China Univ. of Petroleum (Beijing)
Pan, Tao	China Univ. of Petroleum (Beijing)
Zhang, Rui	China Univ. of Petroleum (Beijing)
Zhu, Zhaopeng	China Univ. of Petroleum (Beijing)
Song, Xianzhi	China Univ. of Petroleum (Beijing)
Wang, Chaochen	China Univ. of Petroleum (Beijing)

16:00-17:30	FrP20

A Dynamic Process Monitoring Method Based on Consistency and Discrepancy Preserving Multi-Perspective Feature Fusion

Li, Zhaoyun	Southeast Univ.
Zhang, Jingxin	Southeast Univ.

16:00-17:30	FrP21

A Period-Aware Dynamic Convolutional Method for Multi-Step Time Series Forecasting

Zhang, Zebin	Northeastern Univ.
Li, Jinghao	Northeastern Univ.
Gao, Rui	Northeastern Univ.

16:00-17:30	FrP22

Design and Implementation of a Virtual Digital Human Intelligent Shopping Assistant Platform Based on Microservices Architecture

Niu, Junjie	Zhejiang Univ. of Media and Communications
Tao, Guili	Zhejiang Univ. of Media and Communications

Technical Program for Saturday August 22, 2026

SaM1	Friendship Palace, Shanhai Hall

Computer Vision, Learning, and Decision Systems for Industry (Oral Session)

Chair: Wu, Gaochang	Northeastern Univ.
Co-Chair: Li, xiang	Singapore Institute of Manufacturing, A*STAR
Co-Chair: Yu, Shengping	Northeastern Univ.

09:20-09:35	SaM1.1

Full-Model Adaptation of SAM for Froth Instance Segmentation in Flotation

Zhao, Hongyuan	Northeastern Univ.
Che, Wenfang	China Molybdenum Co., Ltd. (CMOC)
Guo, Aibing	China Molybdenum Co., Ltd. (CMOC)
Liu, Shupeng	China Molybdenum Co., Ltd. (CMOC)
Liu, Wenhou	China Molybdenum Co., Ltd. (CMOC)
Liu, Baizhong	China Molybdenum Co., Ltd. (CMOC)
Cui, Yiming	China Molybdenum Co., Ltd. (CMOC)
He, Hao	Northeastern Univ.
Wu, Gaochang	Northeastern Univ.

09:35-09:50	SaM1.2

FoD-PRM: Training-Free Foreign Object Detection via Prototype Retrieval Matching

Wu, Weimin	Northeastern Univ.
Cai, Mingxiu	Northeastern Univ.
Jie, Huang	Northeastern Univ.
Wu, Gaochang	Northeastern Univ.

9.50-10:05	SaM1.3

Scalable Tensor-Decomposed Representation Learning for Cross-Condition Bearing Fault Diagnosis

Zhang, Leyuan	Singapore Institute of Manufacturing Technology (SIMTech)
Karkulali Pugalenthi	Singapore Institute of Manufacturing Technology (SIMTech)
Doan Ngoc Chi Nam	Singapore Institute of Manufacturing Technology (SIMTech)

10:05-10:20	SaM1.4

AI-Driven Predictive Maintenance for Optimization of Tool Dressing Frequency in a Precision Grinding Process

Yao Xuan Ng	Singapore Institute of Manufacturing Technology
Li, Xiang	Singapore Institute of Manufacturing Technology

10:20-10:35	SaM1.5

Convergence to the Splay State in Nearest-Neighbor Coupled Discrete-Time Kuramoto Rings

Di, Ying	Northeastern Univ.
Dong, Yilang	Northeastern Univ.
Wang, Heng	Chongqing Univ. of Posts and Telecommunications
Dai, Xuewu	Northumbria Univ.

10:35-10:50	SaM1.6

Train Grouping and Two-stage Optimization Algorithm for Railway Train Scheduling

Wu, Rui	Northumbria Univ.
Wei, Feng	CRSC Research & Design Institute Group Co.,Ltd.
Bi, Yao	CRSC Research & Design Institute Group Co.,Ltd.
Liu, Jiang	CRSC Research & Design Institute Group Co.,Ltd.
Yu, Shengping	Northumbria Univ.
Cui, Dongliang	Northumbria Univ.

SaM2	Friendship Palace, Qianshan Hall

Intelligent Learning and Feedback Conference (Oral Session)

Chair: Zhang, Qiang	Dalian Univ. of Technology
Co-Chair: Gao, Weinan	Northeastern Univ.
Co-Chair: Tang, Jing	Hong Kong Univ. of Science and Technology (Guangzhou)
Co-Chair: Yuan, Yuan	Northwestern Polytechnical Univ.

09:20-09:35	SaM2.1

Norm-Constrained Optimization of Dynamic Buffer Networks via DC Programming

Zhao, Chengyan	Kyushu Institute of Technology,

09:35-09:50	SaM2.2

Output-Feedback Hybrid Iteration for Discrete-Time Systems

Liu, Sitong	Northeastern Univ.
Gao, Weinan	Northeastern Univ.

09.50-10:05	SaM2.3

Tactile-Improved Diffusion Policy for Peg-in-Hole Assembly Tasks

Zuo, Anqi	Northeastern Univ.
Xu, Hongzhi	Northeastern Univ.
Zhou, Aiping	Kyland Technology Co., Ltd.
Li, Zhi	Northeastern Univ.

10:05-10:20	SaM2.4

Enhanced Predictive Functional Control Based on a T-S Fuzzy Model and Signal Compensation for Electric Vehicle Air-Conditioning Compressors

Wang, Hailin	Liaoning Petrochemical Univ. / Zhejiang Univ.
Xie, Kairan	Liaoning Petrochemical Univ.
Shi, Huiyuan	Liaoning Petrochemical Univ. / Zhejiang Univ.
Su, Chengli	Liaoning Petrochemical Univ.

10:20-10:35	SaM2.5

Robust Predictive Control Integrating Iterative Learning and Disturbance Input for Multi-phase Batch Processes with Asynchronous Switching

Zhou, Jianxin	Liaoning Petrochemical Univ. / Zhejiang Univ.
Wang, Ling	Liaoning Petrochemical Univ.
Shi, Huiyuan	Liaoning Petrochemical Univ. / Zhejiang Univ.
Su, Chengli	Liaoning Petrochemical Univ.

10:35-10:50	SaM2.6

A Comparative Study of Dual-GDT and Conventional Diode Bridge Rectifier Topologies for Self-Powered Nonlinear CS-TENG Systems

Liu, Chengyao	Tokyo Univ. of Agriculture and Technology
Deng, Mingcong	Tokyo Univ. of Agriculture and Technology

SaM3	Friendship Palace, Jiuyuan Hall

Industrial Process Intelligence operation control and data analysis (Oral Session)

Chair: Dai, Wei	China Univ. of Mining and Technology)
Co-Chair: Qin, Yan	Chongqing Univ.
Co-Chair: Xu, Dezhi	Southeast Univ.

09:20-09:35	SaM3.1

Data-Driven Active Fault-Tolerant MPC for Multi-Rate Nonlinear Industrial Processes

Gu, Yujie	China Univ. of Mining and Technology
Sun, Xiaoyang	China Univ. of Mining and Technology
Hu, Yunsong	Changzhou Univ.
Dai, Wei	China Univ. of Mining and Technology

09:35-09:50	SaM3.2

Predefined-Time Formation Tracking Control of Multi-Leader Multi-UAV Systems with Two-Layer Communication Topologies

Zheng, Bibo	China Univ. of Mining and Technology
Xu, Yunqiu	China Univ. of Mining and Technology
Dai, Wei	China Univ. of Mining and Technology
Feng, Liang	Southern Univ. of Science and Technology

09.50-10:05	SaM3.3

Modeling and Intelligent Dosing Control of Coal Slime Flotation Based on SAC-PID Dual-Layer Drive

Liu, Tong	China Univ. of Mining and Technology

Wang, Lanhao	China Univ. of Mining and Technology
Wang Hongyang	China Univ. of Mining and Technology
Chen, Guizhen	China Univ. of Mining and Technology
Zhang, Xiangrui	China Univ. of Mining and Technology
Dai, Wei	China Univ. of Mining and Technology

10:05-10:20 SaM3.4

Uncertainty-Aware Dynamic Residual Prototype Matching for Robust Fault Diagnosis in Nonlinear Stochastic Systems

Sun, Xiaoyang	China Univ. of Mining and Technology
Nan, Jing	China Univ. of Mining and Technology
Dai, Wei	China Univ. of Mining and T echnology

10:20-10:35 SaM3.5

Research on UAV Cluster Path Planning Based on an Improved Ant Colony Optimization Algorithm

Yang, Juan	Shenyang Aerospace Univ.
Liu, Dong	Shenyang Aerospace Univ.

10:35-10:50 SaM3.6

Robust Optimal Tracking Control for Singularly Perturbed Industrial Systems via Output-Feedback Integral Reinforcement Learning

Xia, Zhenxing	China Univ. of Mining and Technology
Dai, Wei	China Univ. of Mining and Technology

SaM4 Friendship Palace, Friendship Hall

Networked Multi-Agent Systems: Control, Optimization, and Learning (Oral Session)

Chair: Yang, Tao	Northeastern Univ.
Co-Chair: Wen, Guanghui	Southeast Univ.
Co-Chair: Yi, Xinlei	Tongji Univ.
Co-Chair: Xu, Lei	KTH Royal Institute of Technology
Co-Chair: Zhang, Kunpeng	Northeastern Univ.

09:20-09:35 SaM4.1

Data-Driven Moving-Horizon Estimation for LTI Systems with Incomplete Output Measurements

Lv, Guo	Beijing Institute of Technology
Wu, Yue	Academy of Mathematics and Systems Science, Chinese Academy of Sciences
Duan, Peihu	Beijing Institute of Technology

09:35-09:50 SaM4.2

A Diffusion-Prior Collaborative CBS Method for Multi-Robot Path Planning in Workshop Logistics Operation Systems

Shi, Qun	Shenyang Univ. of Technology
Zhou, Yi	Shenyang Univ. of Technology

09.50-10:05 SaM4.3

Shared RBF Surrogate Assisted Expensive Evolutionary Multitask Optimization Algorithm

He, Haoyan	Northeastern Univ.
Yang, Cuie	Northeastern Univ.
Ding, Jinliang	Northeastern Univ.

10:05-10:20 SaM4.4

Furnace Temperature Control Based on Improved Experience Replay Reinforcement Learning-PID for Municipal Solid Waste Incineration Process

Guo, Luhong	Beijing Univ. of Technology
Tang, Jian	Beijing Univ. of Technology
Li, Zhuxuan	Ocean Univ. of China

10:20-10:35 SaM4.5

Manipulated Variable Recommendation Modeling for Municipal Solid Waste Incineration Processes: A Brief Review

Li, Kefan	Beijing Univ. of Technology
Tang, Jian	Beijing Univ. of Technology
Sun, Mingjun	Zhongguancun Zhiyuan Artificial Intelligence Research Institute

10:35-10:50 SaM4.6

Task–Body Decoupled Hierarchical Whole-Body Control with Constraint-Enhanced Reinforcement Learning for Quadruped Manipulators

Xie, Sibo	Northeastern Univ.
Xu, Hongzhi	Northeastern Univ.
Zhou, Aiping	Kyland Technology Co., Ltd.
Li, Zhi	Northeastern Univ.

Technical Program for Saturday August 22, 2026

SaM5 Friendship Palace, Shanhai Hall

Process industry embodied intelligence (PIEI) for municipal solid waste incineration (MSWI)(Oral Session)

Chair: Yu, Wen	Departamento de Control Automatico CINVESTAV-IPN
Co-Chair: Tang, Jian	Engineering Research Cent er of Intelligent Perception and Autonomous Control/ Beijing Univ. of Technology

11:00-11:15 SaM5.1

Model-Free Sliding Mode Control of Steam Flow for Municipal Solid Waste Incineration Processes

Shan, Linjia	Dalian Ocean Univ.
Wang, Wei	Dalian Ocean Univ.
Tang, Jian	Beijing Univ. of Technology
Li, Xiang	Dalian Ocean Univ.

11:15-11:30 SaM5.2

Abnormal Monitoring and Source Tracing of HCl Emissions in Municipal Solid Waste Incineration Based on PLS Residual Contribution Analysis

Zhang, Hao	Dalian Ocean Univ.
Rong, jian	Dalian Ocean Univ.
Tang, jian	Beijing Univ. of Technology

11:30-11:45 SaM5.3

Health-Model-Based Data-Driven Model-Free Adaptive Fault-

Tolerant Control for Furnace Temperature in MSWI Processes

Li, Xiang	Dalian Ocean Univ.
Wang, Wei	Dalian Ocean Univ.
Tang, Jian	Beijing Univ. of Technology
Shan, Linjia	Dalian Ocean Univ.
Wu, Yicong	Dalian Ocean Univ.
Li, Zenan	Dalian Ocean Univ.

11:45-12:00 SaM5.4

Dioxins Emission-Aware DecisionSupport Based on Expert-Aligned Large Language Model for Municipal Solid Waste Incineration Process

Wang, Tianzheng	Beijing Univ. of Technology
Tang, Jian	Beijing Univ. of Technology
Qian, Yu	Zhongguancun Zhiyong Artificial Intelligence Research Institute

12:00-12:15 SaM5.5

Dynamic Evolutionary Optimization Problem Analysis and Perspectives for Municipal Solid Waste Incineration Processes

Li, Bohui	Beijing Univ. of Technology
Tang, Jian	Beijing Univ. of Technology
Pi, Meng	Beijing Chaoyang Environment Group Co. LTD

12:15-12:30 SaM5.6

Process Industry Embodied Intelligence Exploration for the Municipal Solid Waste Incineration Process Under Industrial Site Perspective

Chang, Liqun	Beijing Univ. of Technology
Tang, Jian	Beijing Univ. of Technology
Pi, Meng	Beijing Chaoyang Environment Group Co. LTD

SaM6 Friendship Palace, Qianshan Hall

Embodied AI and Cloud Fog Automation for Industrial Cyber Physical Systems(Oral Session)

Chair: Pang, Zhibo	Peking Univ.
Co-Chair: Zhang, Yinlong	The Institute of AI for Industries, Chinese Academy of Sciences
Co-Chair: Zhang, Le	Xi'an Univ. of Architecture and Technology
Co-Chair: Wang, Qi	Shandong Normal Univ.
Co-Chair: Wang, Ke	Chinese Academy of Sciences
Co-Chair: Jiang, Xiaolin	Nanjing Univ. of Posts and Telecommunications

11:00-11:15 SaM6.1

MP-GOP: Mobile Photogrammetric Reconstruction and Geometric Optimization for Embodied AI Simulation Assets

Wang, Weibing	Yunnan Univ.
Wang, Ke	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Zhang, Bo	Shenyang National Research Institute of Intelligent Robotics Co., Ltd. / Xi'an Univ. of Technology
Li, Dong	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Ma, Fuyu	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Liu, Yu	Univ. of Chinese Academy of Sciences
Lan, Dapeng	Univ. of Chinese Academy of Sciences
Pang, Zhibo	Peking Univ.

11:15-11:30 SaM6.2

GES-Bench: Benchmarking Geometric Accuracy and Deployment Efficiency for Simulation-Ready Single-View 3D Generation

Liao, Jinfeng	Yunnan Univ.
Wang, Ke	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Zhang, Bo	Shenyang National Research Institute of Intelligent Robotics Co., Ltd. / Xi'an Univ. of Technology
Li, Dong	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Ma, Fuyu	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Liu, Yu	Univ. of Chinese Academy of Sciences
Lan, Dapeng	Univ. of Chinese Academy of Sciences
Pang, Zhibo	Peking Univ.

11:30-11:45 SaM6.3

STEAM: Structured Temporal Episode Annotation for Manipulation in Embodied Robots

Deng, Junhao	Yunnan Univ.
Ma, Fuyu	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Zhang, Bo	Shenyang National Research Institute of Intelligent Robotics Co., Ltd. / Xi'an Univ. of Technology
Wang, Ke	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Li, Dong	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences

Liu, Yu	Univ. of Chinese Academy of Sciences
Lan, Dapeng	Univ. of Chinese Academy of Sciences
Pang, Zhibo	Peking Univ.

11:45-12:00 SaM6.4

DCP-ACQ: Decoupled Control and Dual-Path Preview for Cloud-Edge Robot Data Acquisition

Li, Jiajun	Yunnan Univ.
Ma, Fuyu	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Zhang, Bo	Shenyang National Research Institute of Intelligent Robotics Co., Ltd. / Xi'an Univ. of Technology
Wang, Ke	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Li, Dong	Shenyang Institute of Automation, Chinese Academy of Sciences / Univ. of Chinese Academy of Sciences
Liu, Yu	Univ. of Chinese Academy of Sciences
Lan Dapeng	Univ. of Chinese Academy of Sciences
Pang, Zhibo	Peking Univ.

12:00-12:15 SaM6.5

A Time Series Forecasting Method Based on Label-Space Decoupling and Output-Space Adaptation

Cao, Junpeng	Northeastern Univ.
Cao, Xinyu	Northeastern Univ.
Zhou, Ping	Northeastern Univ.

12:15-12:30 SaM6.6

A Semi-Infinite Programming Approach to Trajectory Optimization of Quadrotors with Guaranteed Safety

Qin, Jianing	Northeastern Univ.
Jiang, Lizhong	Northeastern Univ.
Fu, Jun	State Key Laboratory of Synthetical Automation for Process Industries Northeastern Univ.

SaM7 Friendship Palace, Jiuyuan Hall

Advanced Intelligent Systems and Applications (Oral Session)

Chair: Xie, Wen-Fang	Concordia Univ.
Co-Chair: Ma, Xin	Shandong Univ.
Co-Chair: Li, Yongming	Liaoning Univ. of Technology

11:00-11:15 SaM7.1

A High-speed Industrial Product Defect Detection System Based on FPGA

Zhang, Chi	Hangzhou Cigarette Factory of Zhejiang China Tobacco Industry Co., Ltd.
Qin, Ting	Hangzhou Cigarette Factory of Zhejiang China Tobacco Industry Co., Ltd.
Li, Yuliang	Hangzhou Cigarette Factory of Zhejiang China Tobacco Industry Co., Ltd.
Fan, Lifeng	Hangzhou Cigarette Factory of Zhejiang China Tobacco Industry Co., Ltd.
Deng, Guihang	Zhejiang Univ.
Yan, Jiangtao	Zhejiang Univ.

11:15-11:30 SaM7.2

SMFM: A Similarity-Aware Semi-Supervised Cross-Modal Transformer Framework for Industrial Condition Recognition

Mei, Xinyue	Northeastern Univ.
Sun, Junxiang	Northeastern Univ.
Zhang, Yu	Northeastern Univ.

11:30-11:45 SaM7.3

Date-Driven Optimal Tracking Control for Uncertain Nonlinear Systems via Hybrid Iteration

Zhang, Kun	Liaoning Univ. of Technology
Li, Kewen	Liaoning Univ. of Technology
Li, Yongming	Liaoning Univ. of Technology

11:45-12:00 SaM7.4

Adaptive Enclosing Control for Multi-robot Systems With Angle Constraints and Input Saturation

Zhang, Mingyue	Liaoning Univ. of Technology
Li, Kewen	Liaoning Univ. of Technology
Li, Yongming	Liaoning Univ. of Technology

12:00-12:15 SaM7.5

Neural-Network-Triggered Nonlinear Integral Finite-Time Sliding Mode Control for Underactuated Tower Cranes

Li, Zilong	Shandong Univ.
Wang, Kai	Shandong Univ.
Zhao, Dawei	Shandong Univ.
Zhang, Jichen	Shandong Inspur Science Research Institute Co., Ltd
Ma, Xin	Shandong Univ.

12:15-12:30 SaM7.6

Traffic Signs Recognition via Color Adaptive Histogram Equalization, Smoothing and Committee of CNNs

Chen, Guangyi	Concordia Univ.
Xie, Wen-Fang	Concordia Univ.
Babiker, Ibrahim	Concordia Univ.

SaM8 Friendship Palace, Friendship Hall

Intelligent Perception, Detection and Diagnosis (Oral Session)

Chair: Yin, Yunfei	Harbin Institute of Technolgy
Co-Chair: Dong, Zejiao	Harbin Institute of Technolgy
Co-Chair: Zhao, Chunhui	Zhejiang Univ.

11:00-11:15 SaM8.1

Stereo-Camera Road Anomaly Detection and Measurement for Suspension Preview Perception

Zeng, Shenjun	Harbin Institute of Technology
Yin, Yunfei	Harbin Institute of Technology
Li, Mingwu	Harbin Institute of Technology
Zhu, Wanying	Harbin Institute of Technology
Gershome, Abaho G.	Univ. of Rwanda
Dong, Zejiao	Harbin Institute of Technology

11:15-11:30 SaM8.2

Analysis of the Ring Cavity PDH Locking and Frequency Discrimination Characteristics of Laser Gyroscopes

Wang, Yueyue	Xi'an Technological Univ.
Ma, Chao	Xi'an Technological Univ.
Zhang, Binbin	Xi'an Technological Univ.
Chen, Chaobo	Xi'an Technological Univ.
Li, Lin	Xi'an Technological Univ.

11:30-11:45 SaM8.3

Crack-GCA: Structure-Aware Group-Convolution Attention for Pavement Crack Detection

Wei, Tisen	Anhui Univ.
Zhang, Dexiang	Anhui Univ.
Yuan, Fei	Institute of Information Engineering Chinese Academy of Sciences

11:45-12:00 SaM8.4

EPRFormer: An X-ray Electrode Endpoint Detection Network for Power Batteries

Sun, Wenwen	Northeast Petroleum Univ.
Zhang, Kexin	Xi'an Univ. of Architecture and Technology
Li, Shushang	Changchun Univ. of Technology
Zhang, Xiang	Northeast Petroleum Univ.
Wang, Xintao	China Univ. of Petroleum (Beijing) / Peking Univ.
Li, Hao	Northeast Petroleum Univ.

12:00-12:15 SaM8.5

Process-Topology-Aware Causal Root-Cause Analysis Method for Cigarette Quality Anomalies in the Cigarette-Rolling Process

Zhu, Liming	Hangzhou Cigarette Factory China Tobacco Zhejiang Industrial Co.,Ltd
Zhang, Qiang	Hangzhou Cigarette Factory China Tobacco Zhejiang Industrial Co.,Ltd
Wang, Wenbo	Hangzhou Cigarette Factory China Tobacco Zhejiang Industrial Co.,Ltd
Chen, Yangjun	Hangzhou Cigarette Factory China Tobacco Zhejiang Industrial Co.,Ltd
Peng, Bin	East China Jiaotong Univ.
Wang, Hao	Zhejiang Univ.
Zhao, Chunhui	Zhejiang Univ.

12:15-12:30 SaM8.6

Evaluation of Three-Dimensional Positioning Accuracy Based on the Quantitative Truncated Sequential Mesh Test

Chen, Tongtong	Beijing Institute of Tracking and Telecommunications Technology
Yao, Huisheng	Beijing Institute of Tracking and Telecommunications Technology
Hu, Zhenxin	Beijing Institute of Tracking and Telecommunications Technology

Technical Program for Saturday August 22, 2026

SaA1 Friendship Palace, Shanhai Hall

Data-Driven Modeling and Intelligent Analytics (Oral Session)

Chair: He, Yan-Lin	Beijing Univ. of Chemical Technology
Co-Chair: zhu, Qunxiong	Beijing Univ. of Chemical Technology
Co-Chair: Wang, Liangyong	Northeastern Univ.

16:00-16:15 SaA1.1

A Teacher Confidence-Guided Generative Adversarial Network for Industrial Soft Sensing

Zhang, Wei	Beijing Univ. of Chemical Technology
Xu, Yuan	Beijing Univ. of Chemical Technology
Zhu, Qunxiong	Beijing Univ. of Chemical Technology
He, Yan-Lin	Beijing Univ. of Chemical Technology

16:15-16:30 SaA1.2

Measurement-Updated Mixed-Threshold Triggered Distributed Model Predictive Control for Multi-Agent Systems

Zhao, Ningyu	Xi'an Univ. of Architecture and Technology.
He, Ning	Xi'an Univ. of Architecture and Technology.
Xu, Zhongxian	Xi'an Univ. of Architecture and Technology.

16:30-16:45 SaA1.3

FCI-DETR: Hybrid Frequency Detection Transformer for Remote Sensing Object Detection

Wei, Zhifeng	Anhui Univ.
Zhang, Dexiang	Anhui Univ.
Yuan, Fei	Chinese Academy of Sciences

16:45-17:00 SaA1.4

SDPA-YOLO: A Space-Depth Perception and Attention Network for Industrial UAV Tiny Object Detection

Ma, Wenxiang	Anhui Univ.
Zhang, Dexiang	Anhui Univ.
Yuan, Fei	Chinese Academy of Sciences

17:00-17:15 SaA1.5

Uncertainty Quantification for Lithium-Ion Battery End-of-Discharge Prediction Based on a Bayesian Equivalent-Circuit Neural Network Model

Fu, Qingrong	Northeastern Univ.
Wang, Liangyong	Northeastern Univ.

17:15-17:30	SaA1.6
Joint Prediction and Uncertainty Quantification for Crystallization Processes Based on Variational Bayesian Inference	
Jiao, Yongsheng	Northeastern Univ.
Wang, Liangyong	Northeastern Univ.
SaA2	Friendship Palace, Qianshan Hall
Physics-Informed Learning and Intelligent Diagnosis (Oral Session)	
Chair: Liu, Han	Xi'an Univ. of Technology.
Co-Chair: Liu, Xinghua	Xi'an Univ. of Technology
Co-Chair: Wang, Youqing	Beijing Univ. of Chemical Technology
16:00-16:15	SaA2.1
Root Cause Diagnosis Based on Normal Causal Priors and Adaptive Graph Attention Regulation	
Zhang, Haotian	Beijing Univ. of Chemical Technology
Wang, Youqing	Beijing Univ. of Chemical Technology
Ma, Xin	Beijing Univ. of Chemical Technology
16:15-16:30	SaA2.2
Adaptive Spectral Denoising and Hierarchical Diagnosis of Compound Faults Under Severe Noise	
Ge, Jinhao	Beijing Univ. of Chemical Technology
Wang, Youqing	Beijing Univ. of Chemical Technology
Ma, Xin	Beijing Univ. of Chemical Technology
16:30-16:45	SaA2.3
IMHand: Toward Fault-Tolerant Dexterous Grasping under Finger Impairments	
Xu, JiaHao	Anhui Univ.
Yang, PuHai	Anhui Univ.
16:45-17:00	SaA2.4
Bayesian Physics-Informed BP-MotorNN for Uncertainty Quantification of Servo Tightening Torque-Angle Responses	
Luo, Hongbo	Harbin Univ. of Science and Technology
Meng, Deyu	Harbin Univ. of Science and Technology
17:00-17:15	SaA2.5
Lithium-Ion Battery Single-Particle Model Parameter Estimation via Physics-Informed Neural Networks	
Zheng, Tongxing	Xi'an Univ. of Technology
Liu, Xinghua	Xi'an Univ. of Technology
Tian, Jiaqiang	Anhui Univ.
Zhang, Panpan	Xi'an Univ. of Technology
Wang, Rui	Northeastern Univ.
Lv, Wenjun	Univ. of Science and Technology of China
17:15-17:30	SaA2.6
A Causal Scale-Progressive Patch Modeling Framework for Multi-Rate Industrial Soft Sensing	
Ke, Yun	Xi'an Univ. of Technology.
Liu, Han	Xi'an Univ. of Technology.
Tian, Xueqiong	Xi'an Univ. of Technology.
SaA3	Friendship Palace, Jiuyuan Hall
Advanced Methods for Industrial Monitoring and Optimization (Oral Session)	
Chair: Zeng, Jiusun	Hangzhou Normal Univ.
Co-Chair: LU, Shaowen	Northeastern Univ
Co-Chair: Ye, Fang	China Jiliang Univ.
16:00-16:15	SaA3.1
Health Assessment of Boiler Temperature Sensors Based on Measurement Redundancy and Graph Neural Networks	
Liu, Ying	China Tobacco Henan Industrial Co
Liu, Suijun	China Tobacco Henan Industrial Co
Liu, Jiabei	Hangzhou Normal Univ.
Ye, Fang	China Jiliang Univ.
Zeng, Jiusun	Hangzhou Normal Univ.
Liu, Lei	China Tobacco Henan Industrial Co
Niu, Qifan	China Tobacco Henan Industrial Co
16:15-16:30	SaA3.2
Model-free optimal tracking control for time-delay systems using reinforcement Q-learning	
Wang, Xinyan	Northeastern Univ.
Fan, Jialu	Northeastern Univ.
16:30-16:45	SaA3.3
Data-Quality State Assessment for End-Edge-Cloud Monitoring with Node-RED Runtime Checking	
Ma, Jie	Northeastern Univ.
Fan, Jialu	Northeastern Univ.
16:45-17:00	SaA3.4
Operational Optimal Control of Fused Magnesium Furnaces via Adaptive Reinforcement Learning	
Zhang, Wenbo	Northeastern Univ.
Lu, Shaowen	Northeastern Univ.
17:00-17:15	SaA3.5
Distributed Optimal Resource Allocation Control of Fused Magnesia Furnace Clusters via Adaptive RBF Neural Networks	
Wang, Bin	Northeastern Univ.
Lu, Shaowen	Northeastern Univ.
17:15-17:30	SaA3.6
LoRA Fine-Tuned Models for Control Systems Course Q&A: A Multidimensional Evaluation of Model Scale and Rank Effects	
Liu, Chengxu	Northeastern Univ.
Lu, Shaowen	Northeastern Univ.
SaA4	Friendship Palace, Friendship Hall
Machine Learning Methods and Engineering Applications (Oral Session)	

Chair: Xie, Wen-Fang	Concordia Univ.
Co-Chair: Yang, Hai	Shenyang Institute of Sheny ang Institute of Technology
Organizer: Hou, Weiyan	Zhengzhou Univ.
16:00-16:15	SaA4.1
A Teaching Assistant System Based on Large Language Model for Industrial Heat Exchange Process Operational Control Experimental Platform	
Zhang, Yexi	Northeastern Univ.
Yue, Heng	Northeastern Univ.
16:15-16:30	SaA4.2
Incremental Random Vector Functional-link Networks with Two-stage Training Strategy for Soft Sensor Application	
Zhou, Xinyu	China Univ. of Mining and Technology.
Lu, Jun	Shenyang Univ. of Technology, Shenyang.
Zhao, Hui	Shenyang Univ. of Technology, Shenyang.
16:30-16:45	SaA4.3
Handwritten Digits Recognition with Preprocessing, Regularization and Committee of CNNs	
Chen, Guangyi	Concordia Univ.
Xie, Wen-Fang	Concordia Univ.
Ibrahim Babiker	Concordia Univ.
16:45-17:00	SaA4.4
RTK positioning of mobile robot based on process neural network	
Yang, Hai	Shenyang Institute of Technology
Zhu, Hong	Liao Ning Equipment Manufacturing College of Vocational Technology
17:00-17:15	SaA4.5
Fault Diagnosis for Oil-Immersed Transformers based on Deep Fuzzy Min-Max Incremental Learning	
Ma, Yanjuan	TBEA Co.,Ltd/ Criminal Investigation Police Univ. of China.
Wu, Dongyang	TBEA Co.,Ltd
Liu, Jinhai	Northeastern Univ.
17:15-17:30	SaA4.6
An Explainable GRU Based Intrusion Detection System for Time-Sensitive Networking	
Hussein Abrahim	Zhengzhou Univ.
Zhuang, Yan	Zhengzhou Univ.
Wang, Haikuan	Shanghai Univ.
Hou, Weiyan	Zhengzhou Univ.

Author Index

A

Abaho G. Gershome 57
Ashif Newaz 58
Babiker, Ibrahim 64
Bi, Yao 61
Cai, Mingxiu 60
Cao, Junpeng 64
Cao, Kaibin 57
Cao, Xinyu 64
Chai, Tianyou 60
Chang, Liqun 63
Che, Wenfang 60
Chen, Chaobo 65
Chen, Guangyi 64, 67
Chen, Guizhen 62
Chen, Huanjun 59
Chen, Lijia 57
Chen, Ran 58
Chen, Tongtong 63, 65
Chen, Yangjun 65
Cui, Dongliang 61
Cui, Yiming 60
Dai, Chengyang 57
Dai, Wei 57, 61, 62
Dai, Xuewu 61
Deng, Guihang 64
Deng, Junhao 63
Deng, Mingcong 57, 61
Di, Ying 61
Ding, Jinliang 57, 62
Ding, Mei 59
Ding, Zhengtao 57
Doan Ngoc Chi Nam 60
Dong, Yilang 61
Dong, Yuchen 58
Dong, Zejiao 57, 65
Duan, Peihu 62
Duan, Zenghong 59
Fan, Jialu 60, 66
Fan, Lifeng 64
Feng, Liang 61
Fu, Jun 64
Fu, Qingrong 66
Gao, Rui 60
Gao, Shengda 57
Gao, Weinan 58, 59, 61
Gao, Yuchen 58
Gao,Weinan 58
Ge, Jinhao 66
Ge, Lin 57
Gershome, Abaho G. 65
Gong, Zhuoyan 57
Gu, Yujie 61
Guo, Aibing 60
Guo, Luhong 62
Han, Baodong 59
Han, Mei 62
Han, Mengti 57
Han, Xiaofei 57
He, Hao 60
He, Haoyan 62
He, Kaiyue 58
He, Ning 65
He, Yan-Lin 65
Hou, Weiyan 67
Hu, Bin 59
Hu, Yunsong 61
Hu, Zhenxin 63, 65
Huang, Hao 56
Huang, Shijie 58
Huo, Kaixuani 58
Hussein Abrahim 67
Ibrahim Babiker 67
Ji, Yue 57
Jiang, Lizhong 64
Jiang, Xiaolin 63
Jiang, Yi 57
Jiao, Chenxiang 57
Jiao, Yongsheng 66
Jie, Huang 60
Jin, Jianquan 59
Jin,Yuhan 58
Jing, Shaoxue 59
Karkulali Pugalenthi 60

Ke, Yun 66
Lan Dapeng 64
Lan, Dapeng 63, 64
Li, Bohui 63
Li, Dong 63, 64
Li, Donglin 57
Li, Fan 56
Li, Hao 65
Li, Jiajun 64
Li, Jiaze 59
Li, Jinghao 60
Li, Kang 57, 59
Li, Kefan 62
Li, Kewen 64
Li, Lin 65
Li, Mingwu 65
Li, Qihao 60
Li, Qingtao 58
Li, Shushang 65
Li, xiang 60, 61, 62, 63
Li, Yangchen 56
Li, Yongming 64
Li, Yuliang 64
Li, Yuzhe 58
Li, Zenan 63
Li, Zhaoyun 60
Li, Zhi 58, 59, 61, 62
Li, Zhongguo 57
Li, Zhuxuan 62
Li, Zilong 64
Liang, Guanghui 58
Liang, Xue 59
Liao, Jinfeng 63
Liu, Baizhong 60
Liu, Chengxu 67
Liu, Chengyao 61
Liu, Dong 59
Liu, Han 62, 66
Liu, Jiabei 66
Liu, Jiang 61
Liu, Jingchao 58
Liu, Jinhai 67
Liu, Lei 66
Liu, Peng 59
Liu, Shupeng 60
Liu, Sitong 61
Liu, Siyan 59
Liu, Suijun 66
Liu, Tengfei 57
Liu, Tong 61
Liu, Wei 59
Liu, Wenhou 60
Liu, Xinghua 57, 66
Liu, Yequn 58
Liu, Yiheng 58
Liu, Ying 66
Liu, Yu 63, 64
Lu, Jun 67
Lu, Shaowen 59, 66, 67
Luo, Hongbo 66
Lv, Guo 62
Lv, Wenjun 66
Ma, Chao 65
Ma, Fuyu 63, 64
Ma, Hanbo 57
Ma, Jie 66
Ma, Xin 64, 66
Ma, Yanjuan 67
Md Monir Hossain 58
Md. Mushfiqur Rahman 58
Mei, Xinyue 64
Meng, Da 57
Meng, Deyu 66
Meng, Lin 57
Nazmul Ahosan 58
Ni, Yuqing 58
Niu, Junjie 60
Niu, Qifan 66
Pan, Tao 60
Pang, Xinfu 59
Pang, Zhibo 63, 64
Peng, Bin 65
Pi, Meng 58, 63
Qian, Yu 58, 63
Qin, Jianing 64
Qin, Ting 64
Qin, Yan 61
Qu, Fuyi 58

Sajjat Hossain Abir 58
Sayor Ajfar Aaron 58
Shan, Linjia 62, 63
Shi, Gaofei 57
Shi, Huiyuan 61
Shi, Qun 59
Song, Xianzhi 60
Su, Chengli 61
Su, Zhenling 57
Sui, Haoting 58
Sun, Junxiang 64
Sun, Mingjun 62
Sun, Shuo 56
Sun, Wenwen 65
Sun, Xiaoyang 61, 62
Sun, Zheng 62
Sun,Yuhang 58
Tan, Chao 58
Tang, Jian 58, 62, 63
Tang, Jing 61
Tao, Guili 60
Tian, Jiaqiang 66
Tian, Xueqiong 66
Wang, Aohan 59
Wang, Bin 67
Wang, Chaochen 60
Wang, Haikuan 67
Wang, Hailin 61
Wang, Hao 65
Wang, Heng 61
Wang, Junan 57
Wang, Kai 64
Wang, Ke 63, 64
Wang, Lanhao 62
Wang, Lei 57
Wang, Liangyong 65, 66
Wang, Ling 61
Wang, Nan 58
Wang, Qi 63
Wang, Rui 57, 66
Wang, Tianzheng 63
Wang, Wei 62, 63
Wang, Weibing 63
Wang, Wenbo 65
Wang, Xintao 65
Wang, Xinyan 66
Wang, Yanbo 59
Wang, Yangyang 59
Wang, Youqing 66
Wang, Yueyue 65
Wang, Zhenwei 59
Wei, Chongyang 59
Wei, Feng 61
Wei, Tisen 65
Wei, Yuansen 60
Wei, Zhifeng 65
Wen, Guanghui 62
Wu, Dongyang 67
Wu, Gaochang 60
Wu, Jianguo 59
Wu, Rui 61
Wu, Weimin 60
Wu, Yicong 63
Wu, Yue 62
Xia, Zhenxing 62
Xiao, Gaoxi 57
Xie, Kairan 61
Xie, Sibo 62
Xie, Wen-Fang 64, 67
Xu, Dezhi 61
Xu, Haoyuan 58
Xu, Hongzhi 61, 62
Xu, JiaHao 66
Xu, Junjie 58
Xu, Kuang 59
Xu, Lei 56
Xu, Yuan 65
Xu, Yunqiu 61
Xu, Zhanguo 57
Xu, Zhongxian 65
Yan, Huaicheng 57
Yan, Jiangtao 64
Yang, Bowei 59
Yang, Cuie 62
Yang, Hai 57, 67
Yang, Juan 59, 62
Yang, PuHai 66
Yang, Tao 56

Yang, Xiang 57
Yang, Yizhuo 57
Yang, Zijian 59
Yao Xuan Ng 60
Yao, Huisheng 63, 65
Ye, Fang 66
Yi, Wei 58
Yi, Xinlei 62
Yin, Yunfei 57, 65
Yu, Shengping 60, 61
Yu, Wen 62
Yu, Yangzi 59
Yuan, Fei 65
Yuan, Yuan 61
Yue, Heng 67
Zeng, Jiusun 66
Zeng, Shenjun 65
Zhang, Binbin 65
Zhang, Bo 63, 64
Zhang, Chengkai 60
Zhang, Chi 64
Zhang, Dexiang 65
Zhang, Fan 59
Zhang, Haotian 66
Zhang, Jianqiang 58
Zhang, Jianyu 59
Zhang, Jichen 64
Zhang, Jingxin 57, 60
Zhang, Jinxi 58
Zhang, Kexin 65
Zhang, Kun 64
Zhang, Kunpeng 56
Zhang, Le 63
Zhang, Leyuan 60
Zhang, Li 60
Zhang, Mingyue 64
Zhang, Panpan 66
Zhang, Qiang 61, 65
Zhang, Rui 60
Zhang, Simeng 58
Zhang, Wei 65
Zhang, Wenbo 66
Zhang, Xiang 65
Zhang, Xiangrui 57, 62
Zhang, Yexi 67
Zhang, Yinlong 63
Zhang, Yinxue 59
Zhang, Yu 64
Zhang, Zebin 60
Zhao, Chengyan 61
Zhao, Chunhui 65
Zhao, Dawei 64
Zhao, Hongyuan 60
Zhao, Hui 67
Zhao, Ningyu 65
Zheng, Bibo 61
Zheng, Tongxing 66
Zhou, Aiping 61, 62
Zhou, Chenzhan 60
Zhou, Detao 60
Zhou, Jianxin 61
Zhou, Ping 57, 64
Zhou, Xinyu 67
Zhou, Yi 59
Zhu, Hong 57, 67
Zhu, Liming 65
zhu, Qunxiong 65
Zhu, Wanying 65
Zhu, Zhaopeng 60
Zhuang, Yan 67
Zuo, Anqi 61
Zuo, Kai 57

Keyword Index

A	
Award Session-I	FrA1.1, FrA1.2, FrA1.3, FrA1.4, FrA1.5, FrA1.6
Award Session-II	FrA2.1, FrA2.2, FrA2.3, FrA2.4, FrA2.5, FrA2.6
Advanced Intelligent Systems and Applications	SaM7.1, SaM7.2, SaM7.3, SaM7.4, SaM7.5, SaM7.6
Advanced Methods for Industrial Monitoring and Optimization	SaA3.1, SaA3.2, SaA3.3, SaA3.4, SaA3.5, SaA3.6
C	
Control for Embodied Intelligent Robotic Systems	FrA3.1, FrA3.2, FrA3.3, FrA3.4, FrA3.5, FrA3.6
Computer Vision, Learning, and Decision Systems for Industry	SaM1.1, SaM1.2, SaM1.3, SaM1.4, SaM1.5, SaM1.6
D	
Data-Driven Modeling and Intelligent Analytics	SaA1.1, SaA1.2, SaA1.3, SaA1.4, SaA1.5, SaA1.6
E	
Embodied AI and Cloud Fog Automation for Industrial Cyber Physical Systems	SaM6.1, SaM6.2, SaM6.3, SaM6.4, SaM6.5, SaM6.6
I	
Intelligent Learning and Feedback Conference	SaM2.1, SaM2.2, SaM2.3, SaM2.4, SaM2.5, SaM2.6
Industrial Process Intelligence operation control and data analysis	SaM3.1, SaM3.2, SaM3.3, SaM3.4, SaM3.5, SaM3.6
Intelligent Perception, Detection and Diagnosis	SaM8.1, SaM8.2, SaM8.3, SaM8.4, SaM8.5, SaM8.6
M	
Machine Learning Methods and Engineering Applications	SaA4.1, SaA4.2, SaA4.3, SaA4.4, SaA4.5, SaA4.6
N	
Networked Multi-Agent Systems: Control, Optimization, and Learning	SaM4.1, SaM4.2, SaM4.3, SaM4.4, SaM4.5, SaM4.6
P	
Process industry embodied intelligence (PIEI) for municipal solid waste incineration (MSWI)	SaM5.1, SaM5.2, SaM5.3, SaM5.4, SaM5.5, SaM5.6
Physics-Informed Learning and Intelligent Diagnosis	SaA2.1, SaA2.2, SaA2.3, SaA2.4, SaA2.5, SaA2.6
R	
Resilient and Trustworthy Intelligence: Optimization, Learning, and Assurance for Safety-Critical Systems	FrA4.1, FrA4.2, FrA4.3, FrA4.4, FrA4.5, FrA4.6