



CONFERENCE PROGRAM

ICACAR 2024

May 24-26, 2024 | Chongqing, China

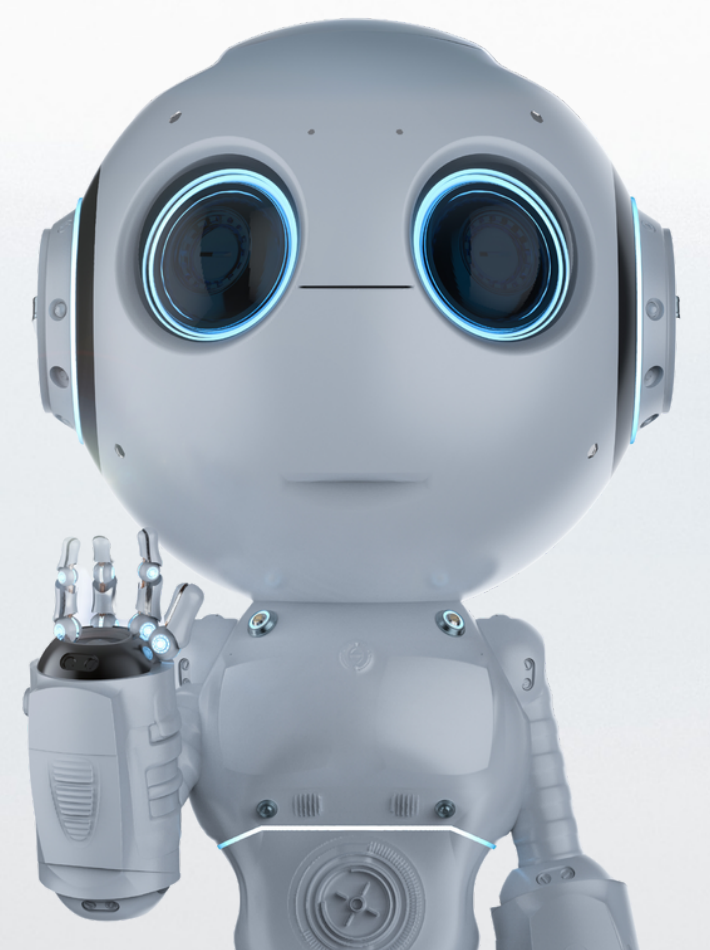
Organizer:  **山东大学**
SHANDONG UNIVERSITY

Co-Organizers:  **西北工业大学**
NORTHWESTERN POLYTECHNICAL UNIVERSITY

 **北京交通大学**
BEIJING JIAOTONG UNIVERSITY

 **河海大学**
HOHAI UNIVERSITY

Supporter:  **上海工程技术大学机器人研究所**
Shanghai University of Engineering Science Robotics Institute of SUES



WELCOME LETTER

Dear Distinguished Participants,

It is our great pleasure to invite you to 2024 3rd International Conference on Advanced Control, Automation and Robotics (ICACAR 2024), which is organized by Shandong University, co-organized by Northwestern Polytechnical University, Hohai University and Beijing Jiaotong University, supported by Shanghai University of Engineering Science Robotics, Institute of SUES.

In recent years, we have seen exciting new research and developments on advanced Control, Automation, and Robotics. Computer and control technologies, intelligent control, robotics, and automation, are transforming many aspects of our industry, government, health-care, and society. Machines are becoming smarter thanks to computer and control algorithms enabled by intelligent control and artificial intelligence. These new developments have revolutionized industrial manufacturing, transportation, and health and societal care. Together, advanced control, automation, and robotics are making our life so much more convenient and enjoyable.

The conference aims to bring together researchers, engineers, scientists and industry professionals in the areas related to advanced control, automation and robotics in a single platform and to present their stimulating research and knowledge transfer ideas in both advanced control, automation, and robotics. Leading researchers and industry experts from around the globe will present the latest studies through oral or poster presentations.

We look forward to meeting each one of you at ICACAR 2024!

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CONFERENCE

VENUE

Conference Venue: Days Hotel

📍 会议地点：重庆戴斯温德姆酒店

Address: No. 33, Shiyang Road, Jiulongpo District, Chongqing, China

酒店地址：重庆市九龙坡区石杨路33号

✈️ 重庆江北机场 Chongqing Jiangbei International Airport

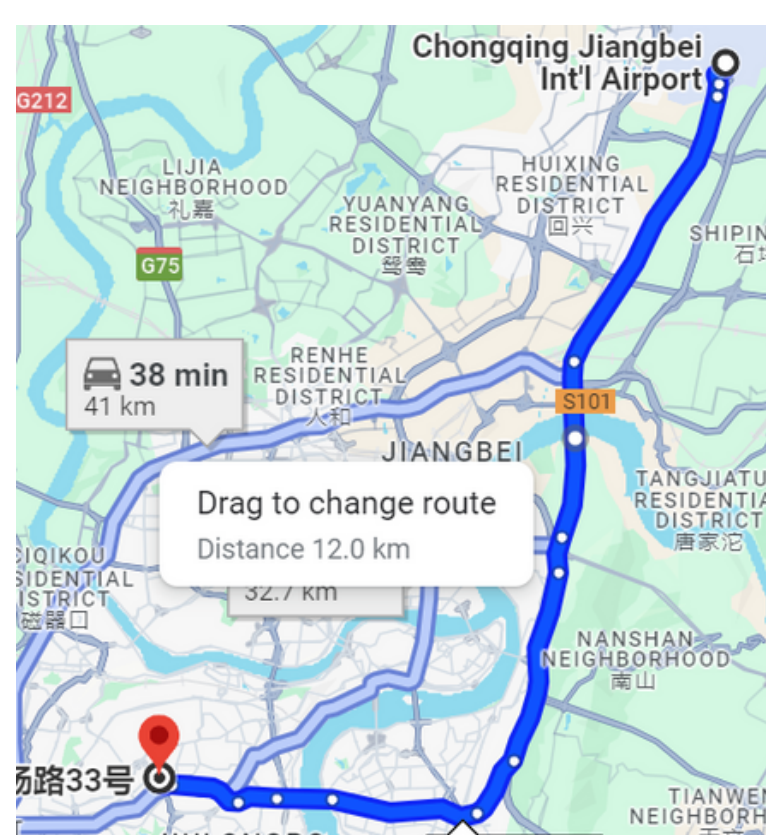
驾车距离33.4公里,约35分钟 33.4 kilometers, about 35 minutes drive

🚄 重庆西站 Chongqingxi Railway Station

驾车距离9.8公里,约12分钟 9.8 kilometers, about 12 minutes drive

🚄 重庆北站 Chongqingbei Railway Station

驾车距离18公里,约28分钟 18 kilometers, about 28 minutes drive



Airport



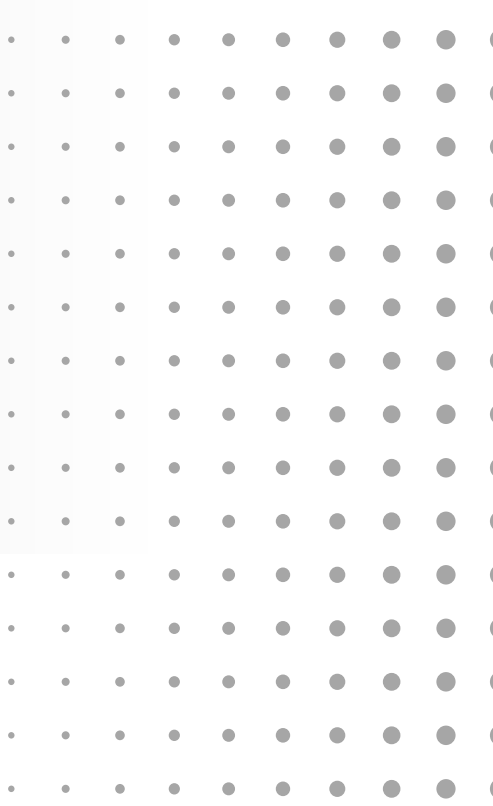
North Railway Station



West Railway Station

CONFERENCE

VENUE



<p>May 24, 2024 (Friday) 09:00-18:00 Hotel Lobby, 1st Floor</p>	<p>10:00-18:00--Onsite Registration</p>
	<p>17:00-18:00--Technical Test Session (For online participants)</p>
<p>May 25, 2024 (Saturday) Multi-function Room II</p>	<p>08:30-18:00--Conference Session</p>
<p>May 26, 2024 (Sunday)</p>	<p>Tours / Social Events (To be determined)</p>

CONFERENCE PROGRAM

—May 25, 2024 (Saturday)—GMT+8

08:30-08:50	Opening Ceremony
08:50-09:40	Keynote Speaker I--Prof. Zhijun Zhang
09:40-10:30	Keynote Speaker II--Prof. Lu Liu
10:30-11:00	Coffee Break & Group Photo
11:00-11:50	Keynote Speaker III--To be confirmed
11:50-14:00	Lunch Time
14:00-16:00	<p style="text-align: center;">Parallel Sessions</p> Special Session I : Flexible Electronics and Systems Special Session II: Artificial Intelligence in Robotics Special Session III: Advanced Control or Energy Management for Battery Systems Special Session IV: Robot Self-detection, Self-prediction and Self-repair Special Session V : In-situ Inspection and Maintenance Robotics: Intelligent Sensing, Control, Locomotion, and Detection Special Session VI: Mobile Compound Operation Robot Special Session VII: Advanced Sensors and Measurement Technologies
16:00-16:30	Tea Break (Late oral registration will be scheduled during this period)
16:30-18:00	Parallel Sessions & Poster Session & Video Session
18:00-18:30	Award & Closing Ceremony
18:30-20:00	Dinner Time

Keynote Session

May 25, 2024 (Saturday)

08:50-09:40

Prof. Zhijun Zhang—South China University of Technology, China

Speech Title: Vary Parameter Recurrent Neural Network Applied to Intelligent Robots and Data Analysis

Biography:



Zhijun Zhang is a professor and doctoral supervisor of South China University of Technology. He is a high-level talent introduction scholar of South China University of Technology, an outstanding young person of Guangdong Province, and a young top talent of Guangdong Science and Technology Innovation. He has long been engaged in the research of neural network, control optimization and robotics. He is currently a member of the Committee on Hybrid Intelligence, Committee on Co-integrated Robotics, Committee on Adaptive Dynamic Planning and Reinforcement Learning, Committee on Visual Perception and Computation of the Chinese Society of Graphics and Imaging, Executive Editor-in-Chief of Global Journal of Neural Science, Associate Editor of International Journal of Robotics and Control. He is also the reviewer of more than 20 international SCI journals, reviewer of China National Foundation Committee, and reviewer of Guangdong High-tech Enterprises.

His main original achievements include: (1) proposed a varying-parameter convergent-differential neural network model, which has super-exponential convergence and good robustness; (2) proposed a real-time natural human-robot interaction method based on neural dynamics to solve the robot real-time natural interaction problem; (3) proposed a robot hybrid multi-index intelligent optimization method to solve the multi-objective optimization problem of different layers; (4) independently developed prototypes of multi-modal polar extreme like human emotional interaction intelligent robots, intelligent flying robots, multimodal rehabilitation-assisted wheelchair robots, complex environment anti-epidemic mask detection intelligent robots, etc., and some of the results are on the way to industrialization.

Abstract:

Everything in nature changes with time is eternal and absolute, while stationary is only relative. Inspired by this fundamental law of nature and based on the neurodynamic approach, Dr. Zhijun Zhang designed and proposed a varying-parameter recurrent neural network. Various forms of varying-parameter recurrent neural networks are designed and derived, and it is theoretically demonstrated that the network has the property of super-exponential convergence in solving time-varying problems and robot motion planning problems. In solving noise-containing problems, this model can effectively suppress noise and has obvious advantages over similar methods. The network model can effectively overcome the limitations of the existing methods in terms of slow convergence and weak robustness in solving time-varying, nonlinear, underdetermined, and multi-solution problems of robot systems in complex environments, and has the advantages of high solution accuracy, fast error convergence, and robustness. In practical systems, this method can be applied to robot motion planning, natural human-robot interaction and flight controller design and many other aspects.

Keynote Session

May 25, 2024 (Saturday)

09:40-10:30

Prof. Lu Liu—City University of Hong Kong, China

Speech Title: Event-Triggered Cooperative Control of Multi-Agent Systems

Biography:



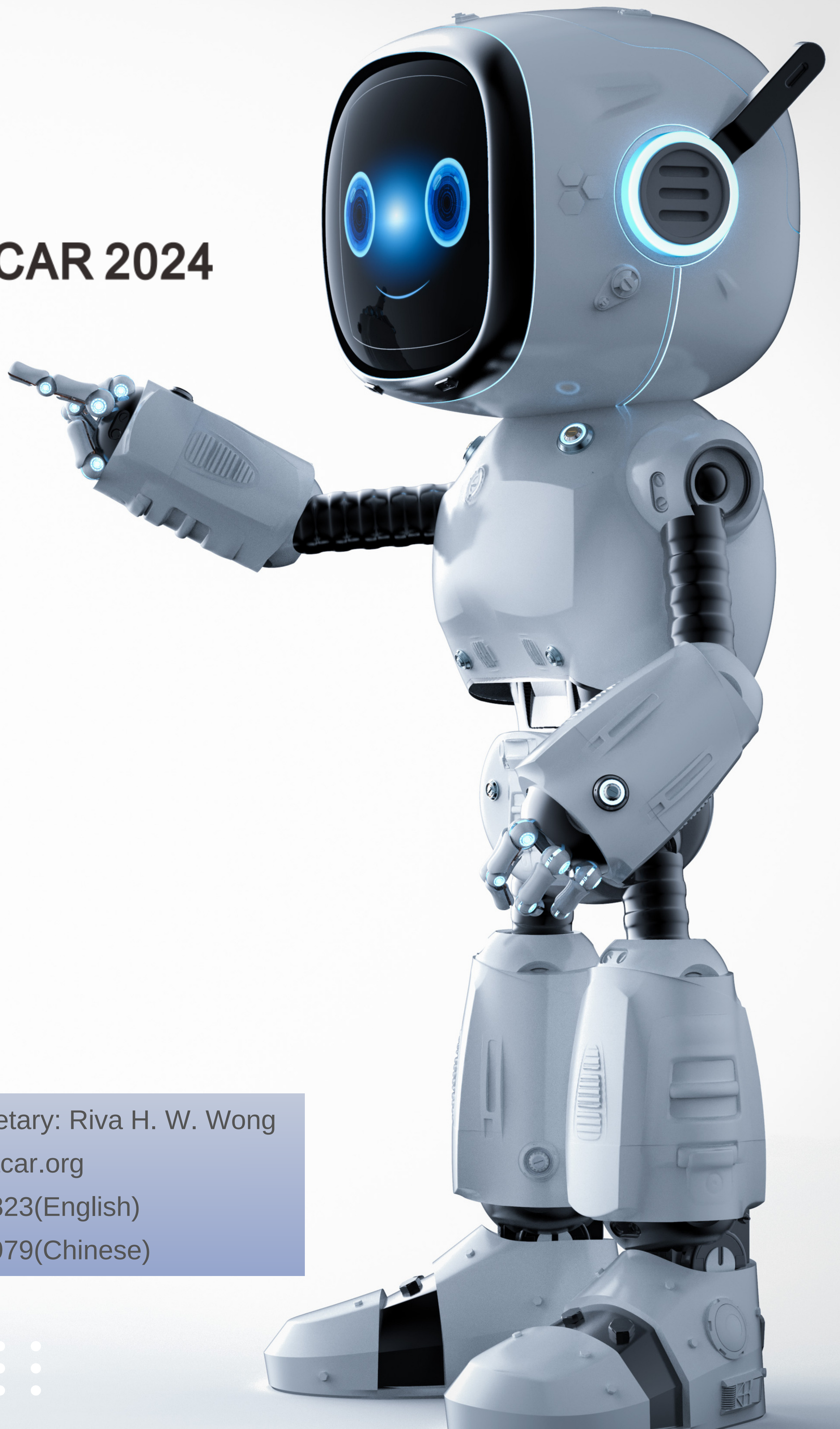
Dr. Lu Liu received her Ph.D. degree in 2008 in the Department of Mechanical and Automation Engineering, the Chinese University of Hong Kong. From 2009 to 2012, she was an Assistant Professor at The University of Tokyo, Japan, and then a Lecturer at The University of Nottingham, United Kingdom. Then she joined the City University of Hong Kong and is currently a Full Professor. Her research interests are primarily in networked dynamical systems, multi-robot systems, and nonlinear control systems. She received several best paper awards in flagship conferences, including the Guan Zhaozhi Award of the 27th Chinese Control Conference in 2008, and the Shimemura Young Author Award of the 11th Asian Control Conference in 2017. She received the Excellent Young Scientists Fund (Hong Kong and Macao) from the National Nature Science Foundation of China (NSFC) in 2022. Dr. Liu is an Associate Editor of IEEE Transactions on Cybernetics, IEEE Transactions on Fuzzy Systems, IEEE Robotics and Automation Letters, Control Theory and Technology, and Unmanned Systems. She served in the organizing committee of several international conferences including General Chair of the 2022 IEEE International Conference on Real-Time Computing and Robotics, General Chair of the 2022 IEEE International Conference on Control and Automation.

Abstract:

Cooperative control of multi-agent systems has received considerable attention in the systems and control community over the past two decades. This is mainly because of its great potential in real-world applications, such as search and rescue by a team of unmanned ground/aerial vehicles, and ocean sampling using a fleet of underwater gliders. In this talk, the cooperative output consensus problem for heterogeneous linear multi-agent systems by event-triggered control will be presented. First, the event-triggered control approach will be briefly reviewed. Then for the considered systems, a distributed event-triggered control strategy is proposed. With this control strategy, the output consensus of the system is achieved asymptotically with intermittent communication. Moreover, the continuous monitoring issue can be avoided.



ICACAR 2024



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