2026 第九届 IEEE 国际无人系统大会
特邀专题简介表

特邀专题名称

无人系统集群具身感知与博弈

组织者

1. 邵海滨，副教授，上海交通大学
2. 苏奇，副教授，上海交通大学
3. 谢威，副教授，上海交通大学
4. 王鹏，副教授，上海交通大学

个人简介

邵海滨，上海交通大学自动化与感知学院，副教授。中国自动化学会、中国指挥与控制学会、中国人工智能学会会员，中国指挥与控制学会具身智能专业委员会委员、中国指挥与控制学会集群智能与协同控制专业委员会委员，中国自动化学会青年工作委员会委员。研究方向为群体智能，多智能体系统，分布式预测控制。在国内外重要期刊和会议上发表包括 IEEE Transactions on Automatic Control 和 Automatica 在内的学术论文 80 余篇。承担项目包括科技部国家重点研发计划项目子课题负责人、主持国家自然科学基金面上项目、上海市自然科学基金项目、中国博士后科学基金项目等，参与国家自然科学基金重大项目，主持工业部门和企业委托等项目。

苏奇，上海交通大学自动化与感知学院副教授。2014 年、2020 年分别于华中科技大学、北京大学取得取得学士、博士学位。曾在美国波士顿大学开展博士学位联合培养，哈佛大学进行学术访问。曾获得美国西蒙斯基金会为期三年的独立经费资助，在宾夕法尼亚大学数学系和生物系从事学术研究。主要研究兴趣为网络科学、群体决策和博弈理论等。在 PNAS、Nature Human Behaviour、Nature Computational Science、Science Advances 等期刊上发表研究论文 20 余篇。多项成果被国家基金委员会、中国教育网、宾夕法尼亚大学、北京大学、上海交通大学官网报道。获得西蒙斯博士后学者奖，中国控制与决策会议

张嗣瀛奖，全国大数据与社会计算会议新星奖等。担任匈牙利基金会评审人以及四个学术期刊副编辑/客座编辑。

谢威，上海交通大学自动化与感知学院副教授，上海长兴海洋实验室双聘研究员；中国科协第八届青年托举人才工程入选者，上海市海外高层次人才入选者，上海市启明星-扬帆计划入选者，期刊《海洋工程装备与技术》编委；主要从事无人系统集群控制研究；正在主持多项国家级课题；已发表和接收的期刊会议论文 57 篇，其中以第一和通讯作者在无人系统领域期刊 IEEE TCST, IEEE TIE 等发表论文 26 篇；先后获得了 2022 年度第五届中国先进技术转化应用大赛优胜奖（排名 2）、2022 年度海南省科学技术奖技术发明奖-特等奖（排名 2）等奖项；指导学生获得 2023 年 7th Chinese Conference on Swarm Intelligence and Cooperative Control 最佳学生论文提名奖以及 2024 年第八届 International Symposium on Computer Science and Intelligent Control 最佳论文奖。

王鹏，上海交通大学自动化与感知学院，副教授。于 2010 年获得山东大学数学学士学位，2013 年获得上海交通大学控制科学与工程硕士学位，2017 年获得加州大学河滨分校电气工程博士学位。曾担任太平洋西北国家实验室的控制科学家和电气工程师。主持国家自然科学基金委青年项目。获上海海外高层次青年人才称号，并担任中国自动化学会预测控制与智能决策专业委员会、中国自动化学会全驱系统理论与应用专业委员会、中国工业与应用数学学会系统与控制数学专委会委员。在 IEEE Transactions on Automatic Control 等国际权威期刊、会议上发表论文 30 余篇。他的研究兴趣包括复杂系统的优化与控制。

特邀专题简介

以无人机、无人艇和无人车集群等为代表的无人系统集群在军事和民用领域发挥着越来越重要的作用。在复杂多变的对抗环境中，无人系统集群需要具身感知自身与环境及其变化，并根据自身与环境变化进行自适应具身博弈决

策，以高效完成任务、提升生存能力和应对动态挑战。因此，研究无人集群具身感知与博弈可以为无人集群在复杂环境中的高效运行提供技术支撑。这一研究不仅具有重要的理论价值，还能为军事、民用等领域提供技术支持，推动无人系统技术的进一步发展。

本特邀专题邀请与“无人系统集群具身感知与博弈”主题相关的包含创新性思想、概念、发现、应用以及技术的原创论文。本特邀专题主要接收（并不限于）以下方向的研究论文：

- 无人集群具身感知与多模态融合
- 无人集群具身博弈与协同控制
- 无人集群具身导航与路径规划
- 无人集群自主学习与知识推理
- 有人无人集群具身人机协同
- 无人集群具身安全与隐私保护
- 无人集群具身健康评估与自愈
- 无人集群具身效能评估技术

IEEE ICUS 2026
Invited Session Summary

Title of Session

Embodied Perception and Game in Unmanned System Swarms

Organizers

1. Assoc. Prof. Haibin Shao
Shanghai Jiao Tong University, China
2. Assoc. Prof. Qi Su
Shanghai Jiao Tong University, China
3. Assoc. Prof. Wei Xie
Shanghai Jiao Tong University, China
4. Assoc. Prof. Peng Wang
Shanghai Jiao Tong University, China

Biosketches of Organizers

Haibin Shao is currently an Associate Professor at the School of Automation and Intelligent Sensing, Shanghai Jiao Tong University, the Member of the Chinese Association of Automation (CAA), Chinese Institute of Command and Control (CICC), and Chinese Association for Artificial Intelligence (CAAI). Committee member of the Embodied Intelligence Committee of CICC, Committee member of the Swarm Intelligence and Cooperative Control Committee of CICC, and member of the Youth Academic Annual Conference of Chinese Association of Automation. His research interests include swarm intelligence, multi-agent systems, and distributed predictive control. Has published over 80 academic papers in prominent domestic and international journals and conferences, including IEEE Transactions on Automatic Control and Automatica. Projects undertaken include the National Key R&D Program of the Ministry of Science and Technology, principal investigator for the General Program of the National Natural Science Foundation of China, Shanghai Natural Science Foundation projects, and China Postdoctoral Science Foundation projects. Participated in major projects of the National Natural Science Foundation of China and led 15 enterprise-commissioned projects.

Qi Su is currently an Associate Professor at the School of Automation and Intelligent Sensing, Shanghai Jiao Tong University. He received the Bachelor degree and Ph.D. degree from Huazhong University of Science and Technology and Peking University in 2014 and 2020, respectively. Supported by the Simons Foundation, he had been working as a Simons Postdoctoral Fellow in the Department of Mathematics at the University of Pennsylvania from 2020 to 2022. He was a visiting scholar at Boston University and Harvard University. His research interests include network science, collective decision-making, and game theory. He has published over 20 scientific papers, including PNAS, Nature Human Behaviour, Nature Computational Science, Science Advances.

Wei Xie is currently an Associate Professor at the School of Automation and Intelligent Sensing, Shanghai Jiao Tong University, and a dual-appointed researcher at the Shanghai Changxing Marine Laboratory. Selected for the 8th Young Talent Support Program by the China Association for Science and Technology, the Shanghai High-Level Overseas Talent Program, and the Shanghai Rising-Star Sailing Program. Serves as an editorial board member for the journal “Ocean Engineering Equipment and Technology”. His research primarily focuses on swarm control of unmanned systems, and he is currently leading multiple national-level research projects. He has published 57 journal and conference papers, including 26 as the first or corresponding author in prestigious unmanned systems journals such as IEEE TCST and IEEE TIE. In 2022, he received the Excellence Award at the 5th China Advanced Technology Application Competition (ranked 2nd) and the Special Prize for Technological Invention at the 2022 Hainan Provincial Science and Technology Awards (ranked 2nd). He has also guided students to achieve notable accolades, including the Best Student Paper Nomination at the 7th Chinese Conference on Swarm Intelligence and Cooperative Control in 2023 and the Best Paper Award at the 8th International Symposium on Computer Science and Intelligent Control in 2024.

Peng Wang is currently an Associate Professor at the School of Automation and Intelligent Sensing, Shanghai Jiao Tong University. He received the B.S. degree in mathematics from Shandong University in 2010, the M.S. degree in control science and engineering from Shanghai Jiao Tong University in 2013, and the Ph.D. degree in electrical engineering from the University of California, Riverside in 2017. He was a control scientist and an electrical engineer at

the Pacific Northwest National Laboratory. His research interests include distributed optimization and control with applications to complex systems.

Details of Session

Unmanned system swarms, represented by swarms of drones, unmanned surface vessels, and unmanned ground vehicles, are playing an increasingly important role in both military and civilian domains. In complex and dynamic adversarial environments, these swarms require embodied perception to sense themselves, their surroundings, and changes therein. They must also make adaptive embodied gaming decisions based on these perceptions to efficiently accomplish tasks, enhance survivability, and respond to dynamic challenges. Therefore, research into embodied perception and gaming in unmanned swarms can provide technical support for their efficient operation in complex environments. This research not only holds significant theoretical value but also offers technical support for military and civilian applications, driving further advancements in unmanned system technologies.

This invited session invites original papers of innovative ideas, concepts, discoveries, applications, and technologies related to the topic " Embodied Perception and Game in Unmanned System Swarms" and mainly accepts (but is not limited to) submissions related to the following topics.

- Embodied Perception and Multimodal Fusion in Unmanned Swarms
- Embodied Gaming and Cooperative Control in Unmanned Swarms
- Embodied Navigation and Path Planning in Unmanned Swarms
- Autonomous Learning and Reasoning in Unmanned Swarms
- Embodied Human-Machine Collaboration in Manned-Unmanned Swarms
- Embodied Security and Privacy Protection in Unmanned Swarms
- Embodied Health Assessment and Self-Healing in Unmanned Swarms
- Embodied Performance Evaluation Technologies for Unmanned Swarms