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

无人系统海洋态势智能感知与认知

组织者

1. 王海鹏，正高工，海军研究院

2. 刘　瑜，研究员，清华大学

3. 陈　波，教授，哈尔滨工业大学(深圳)

4. 刘　颢，研究员，武汉数字工程研究所

5. 赵文达，教授，大连理工大学

6. 耿　亮，教授，湖北工业大学

7. 安　彧，副教授，湖北工业大学

个人简介

王海鹏，海军研究院正高工、博导。长期从事多域态势感知与认知方向的技术研究与工程应用，主持国家自然科学基金等课题 10 余项，获山东省科技进步一等奖 2 项、国防科技进步一等奖 1 项；授权国家发明专利 40 余项；出版著作 5 部，在 IEEE TAPMI、TGRS 等发表论文 30 余篇。被评为长江学者、泰山学者等，享受国务院特殊津贴，获求是奖、山东省青年科技奖。兼任中国指挥与控制学会青工委副主任委员、多域态势感知与智能认知专委会副主任委员、中国人工智能学会智能融合专委会常委等。

刘瑜，清华大学电子工程系研究员，博导，国家杰青/优青，中国青年科技奖获得者，享受国务院政府特殊津贴。现任中国航空学会理事及青工委副主任、中国指挥与控制学会具身智能专委会副主任、中国人工智能学会智能融合专委会副秘书长/常委。长期致力于多模态数据智能融合、无人系统智能决策等方向的研究，在相关领域重要学术会议与期刊上发表高水平学术论文 90 余篇，获授权专利 60 余项，登记软件著作权 20 余项。主持国家重点研发计划项目课题、国家自然科学基金重大项目课题等 10 余项科研任务，主要成果已

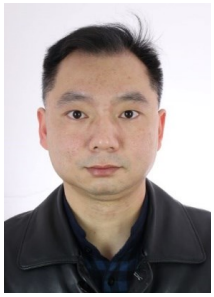
应用于多项实装系统中，获省部级科技一等奖 4 项，兼任 IEEE TNNLS、TMC、CJA、CJE 等国内外期刊编委。

陈波，哈尔滨工业大学（深圳）教授、博士生导师，国家人才工程青年拔尖人才，深圳市高层次人才。兼任全国北斗卫星导航标准化技术委员会委员、中国宇航学会飞行器任务规划专委会委员、中国 GIS 协会空间大数据工委会副秘书长、中国遥感应用协会遥感卫星数据处理专委会委员等学术职务。长期致力于卫星数据智能处理、智能边缘计算、空间大数据等方向的研究，主持并完成了 973 计划课题、863 项目、国家重点研发计划课题、装备预研计划、创新特区计划等 20 余项国家级科研项目，部分成果已发展成国家和行业标准，服务于测绘、减灾、环保、北斗、高分等国家重要行业和领域。出版专著 3 部，发表论文 80 余篇，参与编写国标、国军标等重要国家级标准 5 部，获发明专利 20 余项，以核心完成人身份获省部级科技进步一等奖 1 项、二等奖 9 项。

刘颢，中船 709 所总体部第三研究室副主任，研究员，中船集团青年拔尖人才，中国指挥与控制学会青年工作委员会常务委员、航空学会信息融合分会委员，主要研究方向为信息融合、态势认知，作为负责人主持海军、军委装备发展部、军科委 173 计划等课题 5 项，作为主要人员参与 10 余项，牵头研制了多型船信息融合系统，获集团科技进步一等奖、二等奖各 1 项，获山东省科技进步一等奖 1 项，军队科技进步二等奖 1 项，获授权国家发明专利 10 余项，发表 SCI、EI、中文核心论文 10 余篇。

赵文达，大连理工大学教授、博士生导师，国家级青年人才。研究方向为多模态遥感图像分析，在包括 CVPR，ICCV，AAAI 等本领域顶级会议以及 IEEE TPAMI，IEEE TIP 等本领域顶级期刊上发表学术论文 50 余篇。出版专著 2 部，授权专利 20 余项。获得山东省科技进步一等奖，中国指控学会技术发明二等奖，国际 IEEE 多媒体技术委员会最佳论文奖。担任 IEEE Transactions on Image Processing 编委，中国人工智能学会智能融合专业委员会副秘书长，中

国图象图形学会遥感图像专业委员会委员。



耿亮，湖北工业大学教授、博士生导师，中国现场统计研究会资源与环境统计分会常务理事，湖北省数学学会第十三届理事会理事，武汉市数学学会第十三届理事会理事，武汉工业与应用数学学会第九届理事会理事。主要研究方向为数据科学与决策、态势认知。主持及参与多项军科委 173 计划项目子课题、国家自然科学基金项目以及省部级研究项目，主编教材 2 部，发表论文 20 余篇。

安彧，湖北工业大学副教授、硕士生导师，中国指挥与控制学会青年工作委员会委员，主要研究方向为多传感器智能感知、态势认知、数据分析与决策，作为技术骨干参与完成了多项海军、军委装备发展部预研课题。作为项目负责人完成军科委 173 计划项目子课题 1 项及多项相关研究领域横向课题。

特邀专题简介

随着先进传感器的广泛应用以及人工智能技术新潮流的快速兴起，海上无人系统进入高速发展时期。当今的海上无人系统群体可实现在复杂海况下协同感知海域中的目标实体及海洋信息，为海洋态势智能感知与认知提供新的技术手段。本特邀专题目的在于促进无人系统海洋态势智能感知与认知领域的新概念、新理论及新技术的发展，为相关领域的专家、学者及工程技术人员提供交流平台。

本特邀专题邀请以下与“无人系统海洋态势智能感知与认知”主题相关的包含创新思想、概念、新发现、改进以及新应用的原创论文。

- 态势时空知识图谱构建与演进
- 海上态势智能感知
- 可解释性态势深度认知
- 海上无人系统自主控制
- 海上态势智能认知计算加速
- 海上无人系统行为意图研判与反欺骗

- 海上无人系统博弈对抗
- 面向大模型的海洋态势认知框架构建
- 面向海上态势认知的智能图计算系统

IEEE ICUS 2026
Invited Session Summary

Title of Session

Marine Situation Intelligent Awareness and Cognition of Unmanned System

Organizers

1. Prof. Haipeng Wang
Naval Research Academy, China
2. Prof. Yu Liu
Tsinghua University, China
3. Prof. Bo Chen
Harbin Institute of Technology (Shenzhen), China
4. Prof. Hao Liu
Wuhan Digital Engineering Institute, China
5. Prof. Wenda Zhao
Dalian University of Technology, China
6 Prof. Liang Geng
Hubei University of Technology, China
7. Assoc. Prof. Yu An
Hubei University of Technology, China

Biosketches of Organizers

Haipeng Wang is a Professorate Senior Engineer and doctoral supervisor at the Naval Research Academy. He has long been engaged in technical research and engineering applications in the field of multi-domain situational awareness and cognition. He has presided over more than 10 research projects including those funded by the National Natural Science Foundation of China, and has been awarded 2 First Prizes of Shandong Provincial Science and Technology Progress Award and 1 First Prize of National Defense Science and Technology Progress Award. He holds more than 40 authorized national invention patents, has published 5 monographs, and authored over 30 academic papers in journals such as IEEE TAPMI and IEEE TGRS. He has been honored as a Changjiang Scholar, a Taishan Scholar, and a recipient of the Special Government Allowance of the State Council. He has also received the Qiu Shi Outstanding Scientist Award and the Shandong Youth Science and Technology Award. Concurrently, he serves as Deputy Director of the Youth Working Committee of the Chinese Command and Control Society, Deputy Director of the Technical Committee on Multi-domain Situational Awareness and Intelligent Cognition, and Standing Member of the Technical Committee on

Intelligent Integration of the Chinese Association for Artificial Intelligence.

Yu Liu is a Research Fellow and doctoral supervisor in the Department of Electronic Engineering at Tsinghua University. He is a recipient of the National Science Fund for Distinguished Young Scholars, the National Science Fund for Excellent Young Scholars, the China Youth Science and Technology Award, and the State Council Government Special Allowance. He currently serves as a Council Member of the Chinese Society of Aeronautics and Astronautics and Deputy Director of its Youth Working Committee, Deputy Director of the Embodied Intelligence Committee of the Chinese Institute of Command and Control, and Deputy Secretary-General / Standing Committee Member of the Intelligent Fusion Committee of the Chinese Association for Artificial Intelligence. He has long been engaged in research on multimodal data intelligent fusion and intelligent decision-making for unmanned systems. He has published more than 90 high-level papers in leading conferences and journals in related fields, been granted more than 60 patents, and registered more than 20 software copyrights. He has led more than 10 major research projects, including projects under the National Key R&D Program of China and major programs of the National Natural Science Foundation of China. His major achievements have been applied in multiple deployed systems, and he has received four first-class provincial- or ministerial-level science and technology awards. He also serves on the editorial boards of domestic and international journals, including IEEE Transactions on Neural Networks and Learning Systems (TNNLS), IEEE Transactions on Mobile Computing (TMC), Chinese Journal of Aeronautics (CJA), and Chinese Journal of Electronics (CJE).

Bo Chen is a professor and doctoral supervisor of Harbin University of Technology (Shenzhen), a young top talent of national talent project and a high-level talent in Shenzhen. He also serves as a member of the national Beidou satellite navigation Standardization Technical Committee, a member of the special committee for aircraft mission planning of China Aerospace society, the Deputy Secretary General of the space big data working committee of China GIS Association, and a member of the special committee for remote sensing satellite data processing of China Remote Sensing Application Association. For a long time, it has been committed to the research on intelligent processing of satellite data, intelligent edge computing, space big data and other directions. It has presided over and completed more than 20 national scientific research projects such as 973 program, 863 project, national key R & D program, equipment pre research plan and

innovation special zone plan. Some of the achievements have developed into national and industrial standards, serving important national industries and fields such as surveying and mapping, disaster reduction, environmental protection, Beidou and Gaofen. He has published 3 monographs, more than 80 papers, participated in the preparation of 5 important national standards such as national standards and national military standards, won more than 20 invention patents, and won 1 first prize and 9 second prizes of provincial and ministerial scientific and technological progress.

Hao Liu, member of the youth committee of CICC, member of the information fusion branch of CSAA, is a researcher at Wuhan digital engineer institute. His main research interests include information fusion and situation cognition. As the person in charge, he presided over 4 topics, such as sub topics of the 173 key projects, pre study of Navy and the equipment development department of the Military Commission, participated in more than 10 projects as the main personnel, and led the development of multi type ship information fusion system. It won one 1st prize and one 2nd prize of the group's scientific and technological progress, one 1st prize of Shandong provincial scientific and technological progress, one 2nd prize of military scientific and technological progress, 10 authorized national invention patents, and published 9 SCI, EI and Chinese core papers.

Wenda Zhao, a National-Level Young Talent, is a professor and doctoral supervisor of Dalian University of Technology. His research focuses on multimodal remote sensing image analysis. He has published over 50 academic papers in top-tier conferences in the field, including CVPR, ICCV, and AAAI, as well as in leading journals such as IEEE TPAMI and IEEE TIP. He has authored two monographs and holds over 20 patents. He has received the First Prize for Scientific and Technological Progress from Shandong Province, the Second Prize for Technological Invention from the China Association of Command and Control, and the Best Paper Award from the IEEE Multimedia Technical Committee. He serves as an editorial board member for IEEE Transactions on Image Processing, Deputy Secretary-General of the Intelligent Fusion Professional Committee of the Chinese Association for Artificial Intelligence, and a member of the Remote Sensing Image Professional Committee of the China Society of Image and Graphics.

Liang Geng is a professor and doctoral supervisor at Hubei University of Technology. He holds the position of standing council member of the Resource and Environmental Statistics Branch of the Chinese Association for Applied Statistics, council member of the 13th Hubei Mathematical Society, council member of the 13th Wuhan Mathematical Society, and council member of the 9th Wuhan Industrial and Applied Mathematics Society. His primary research focuses on data science and decision-making, as well as situational awareness. He has led and participated in multiple sub-projects under the Military Science Commission's 173 Program, National Natural Science Foundation projects, and various provincial and ministerial research initiatives. Additionally, he has authored two textbooks and published over 20 academic papers.

Yu An, member of the youth committee of CICC, is a associate professor and master's supervisor of Hubei University of Technology. His main research interests include multi-sensor intelligent perception, situation cognition, data analysis and decision-making. As a technical backbone, he has participated in a number of pre-research projects of the Navy and the Equipment Development Department of the Military Commission. As the project leader, he completed 1 sub-project of the Military Science Commission's 173 Program and a number of horizontal projects in related research fields.

Details of Session

With the wide application of advanced sensors and the rapid rise of the new trend of artificial intelligence technology, marine unmanned systems have entered a period of rapid development. Nowadays, marine unmanned system groups can realize the cooperative awareness of target entities and marine information under complex marine situation, providing new technical means for marine situation intelligent awareness and cognition. The aim of the invited session is to promote the development of new concepts, theories and technologies in the field of marine situation intelligent awareness and cognition of unmanned system. It provides a communication platform for experts, scholars and engineering technicians in relevant fields.

The invited session invites original papers of innovative ideas and concepts, new discoveries and improvements, and novel applications relevant to the following selected topics of "Marine situation intelligent awareness and cognition of unmanned system".

- Construction and evolution of situation spatiotemporal knowledge graph

- Intelligent awareness of marine situation
- Interpretable of situation depth cognition
- Autonomous control of marine unmanned system
- Computing acceleration of marine situation intelligence cognition
- Behavioral intent judgment and anti-spoofing of marine unmanned systems
- Game confrontation of marine unmanned systems
- Construction of cognitive framework of marine situation oriented to large model
- Intelligent Graph Computing System for Situation Cognition at Sea