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

面向无人机拦截的 AI 增强制导、导航与控制

组织者

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个人简介

杨跃能，国防科技大学空天科学学院教授，博士生导师，军队青年科技英才、湖南省芙蓉计划科技领军人才，主要从事飞行器总体设计与控制研究，发表论文 70 余篇，授权发明专利 40 余项，出版专著 2 部，获省部级科技奖励 4 项，入选全球前 2%顶尖科学家学术影响力榜单。担任中国指挥与控制学会无人系统专业委员会委员、中国宇航学会高级会员、国际仿生工程学会会员。担任《Drones》客座主编，《Journal of Bionic Engineering》、《信息与控制》、《无人系统技术》青年编委。

何绍溟，北京理工大学空天科学与技术学院教授，博士生导师，国家级青年人才。主要从事飞行器制导、多目标跟踪与决策、人工智能在航空航天中的应用等方向研究。主持国家自然科学基金，军委科技委 HC 基金重点项目、装发十四五共用技术、基础加强计划课题等国防科研项目。担任多个期刊的编委、IFAC 航天控制技术委员会委员。

韩拓，北京航空航天大学自动化科学与电气工程学院，研究员，博士生导师，国家级青年人才。专注于飞行器导航、制导与控制研究，主持国家和省部级等科研项目 10 余项，授权国家发明专利和软件著作权 30 余项，在 AIAA、IEEE 等航空航天与自动控制领域期刊及会议发表论著 50 余篇。获北京市技术发明一等奖、CAA 自然科学一等奖、CAA 优博论文奖等，担任 ASCE JAE 等多个航空航天 SCI 期刊编委。

黎克波，国防科技大学空天科学学院副研究员，博士生导师。主要从事飞行器制导控制、无人集群决策规划等方向研究。主持国家自然科学基金、173 计划等科研项目。发表学术论文 90 余篇，获军队/军事科技进步奖一等奖 1 项、二等奖 2 项，担任《Astrodynamics》《战术导弹技术》等学术期刊青年编委。

董伟，北京理工大学预聘副教授（特别研究员），博士生导师，入选全国博士后创新人才支持计划。长期从事飞行器协同制导与控制相关理论、技术和应用研究，在 JGCD 等顶级期刊发表第一/通讯作者论文 20 余篇，出版英文专著 1 部。主持国家自然科学基金、中国航空学会青年科学家基金等项目，获全国博士后科研业绩评估考核资助、中国航空学会博士学位论文托举工程等荣誉奖励。现任中国指挥与控制学会无人系统专业委员会，《宇航学报》青年编委。

特邀专题简介

随着无人机（UAV）的广泛应用，空域安全与防御面临日益严峻的挑战。高效、精准地拦截具有潜在威胁的无人机已成为民用空域管理与军事防御领域的关键难题。其中，制导、导航与控制（GNC）是成功拦截的核心关键技术。近年来，人工智能（AI）的快速发展赋予 GNC 系统更强的感知、决策与适应能力，使其能够在复杂动态环境中实现更快速、更可靠、更自主的拦截。

本次专题会议旨在为全球相关领域的专家、学者与工程师提供一个高端交

流平台，集中展示和分享在“面向无人机拦截的 AI 增强制导、导航与控制”方面的前沿思想、创新方法与重要成果。通过深入的研讨交流，我们期望推动该领域在理论创新、技术突破与系统应用方面的进步。

会议主题涵盖但不限于以下方向：

- 面向拦截任务的轨迹规划与制导律设计
- 对抗环境下的智能感知与目标识别
- 基于机器学习的自适应与鲁棒控制
- 多拦截器智能协同策略与多智能体集群博弈方
- 自主决策与人在回路的混合智能控制
- 拦截任务中的导航抗干扰与高精度定位
- 真实环境下的算法验证、仿真测试与实验
- 相关软硬件系统集成与创新应用

我们诚挚邀请广大同仁不吝赐稿并参会，共同探讨如何利用人工智能技术提升拦截系统的自主性、智能化与整体效能，积极应对未来空域安全面临的新挑战。

IEEE ICUS 2026
Invited Session Summary

Title of Session

AI-Enhanced Guidance, Navigation and Control for Intercepting Unmanned Aerial Vehicles

Organizers

1. Prof. Yueneng Yang
National University of Defense Technology, China

2. Prof. Shaoming He
Beijing Institute of Technology, China

3. Prof. Tuo Han
Beihang University, China

4. Assoc. Prof. Kebo Li
National University of Defense Technology, China

5. Assoc. Prof. Wei Dong
Beijing Institute of Technology, China

Biosketches of Organizers

Yueneng Yang is a professor and PhD supervisor at the College of Aerospace Science and Engineering, National University of Defense Technology. He is a recipient of the Young Talents in Military Science and Technology award and the Hunan Provincial Science and Technology Leading Talent award. His research focuses on aircraft design and control. With over 70 journal papers, 40 authorized patents, and 2 monographs, he has established himself as a leading researcher in his field. His work has been recognized with prestigious honors, including being named among the World's Top 2% of Scientists and receiving four provincial/ministerial-level science and technology awards. Prof. Yang actively contributes to the academic community through his service on multiple professional committees, including the Unmanned Systems Committee (Chinese Institute of Command and Control), the Chinese Society of Astronautics, and the International Society of Bionic Engineering. He also serves as a Youth Editorial Board Member for several journals, including *Drones*, the *Journal of Bionic Engineering*, *Information and Control*, and *Unmanned Systems Technology*.

Shaoming He is a professor and PhD Supervisor at the School of Aerospace Engineering, Beijing Institute of Technology, and a recipient of the National Young Talent. His research mainly focuses on aircraft guidance, multi-target tracking and decision-making, and the application of artificial intelligence in aerospace engineering. He presides over a number of national defense research projects, including the National Natural Science Foundation of China, the key project of the HC Fund of the Commission for Science, Technology and Industry for National Defense, the shared technology program of the 14th Five-Year Plan of the Armament Development Department, and research projects under the Basic Strengthening Program. He serves as an editorial board member of several academic journals and a Member of the IFAC Aerospace Control Technical Committee.

Tuo Han is a Professor and PhD Supervisor at the School of Automation Science and Electrical Engineering, Beihang University. His research focuses on navigation, guidance, and control of flight vehicles. He has led over 10 research projects funded by national and provincial-level agencies, and holds more than 20 authorized national invention patents and software copyrights. He has published over 50 papers in prestigious journals and conferences in the fields of aerospace engineering and automatic control, including AIAA and IEEE publications. He is the recipient of the First Prize of Natural Science Award from the Chinese Association of Automation (CAA) and the CAA Outstanding Doctoral Dissertation Award. He also serves on the editorial boards of several SCI-indexed journals in the aerospace field.

Kebo Li is an associate professor and PhD Supervisor at the College of Aerospace Science and Engineering, National University of Defense Technology. His research mainly focuses on aircraft guidance and control, as well as decision-making and planning for unmanned swarms. He presides over a number of research projects including the National Natural Science Foundation of China and the 173 Program. He has published over 90 academic papers and has won one First-Class Award and two Second-Class Awards of the Military Science and Technology Progress Award. He serves as a Young Editorial Board Member of academic journals such as *Astrodynamics* and *Tactical Missile Technology*.

Wei Dong is an Associate Professor (Special Researcher) and Doctoral Supervisor at Beijing Institute of Technology. He is a recipient of the National Postdoctoral Program for Innovative Talents. His research focuses on theories, technologies, and applications of cooperative guidance and control for flight vehicles. He has published over 20 papers as first or corresponding author in prestigious journals including the *Journal of Guidance, Control, and Dynamics*, and *IEEE Transactions on Aerospace and Electronic Systems*, and has authored one English monograph. He serves as Principal Investigator for projects funded by the National Natural Science Foundation of China and the Youth Scientist Fund of the Chinese Society of Aeronautics and Astronautics. He has received honors such as the National Postdoctoral Research Performance Evaluation and Funding Grant, and the Doctoral Dissertation Supporting Program of the Chinese Society of Aeronautics and Astronautics. He is currently a member of the Unmanned Systems Professional Committee of the Chinese Institute of Command and Control, and a Youth Editorial Board Member of the *Journal of Astronautics*.

Details of Session

With the widespread application of Unmanned Aerial Vehicles (UAVs), airspace security and defense face increasingly severe challenges. Efficient and precise interception of potential threat UAVs has become a critical technological requirement in both civil airspace management and military defense. In this context, Guidance, Navigation, and Control (GNC) technologies form the core of interception systems. In recent years, the rapid advancement of Artificial Intelligence (AI) has endowed GNC systems with enhanced capabilities in perception, decision-making, and adaptation, enabling faster, more reliable, and more autonomous interception in complex dynamic environments.

This session aims to provide a premier platform for experts, scholars, and engineers worldwide to exchange cutting-edge ideas, showcase novel methodologies, and share significant achievements in the field of "AI-Enhanced Guidance, Navigation and Control for Intercepting Unmanned Aerial Vehicles." Through in-depth discussion, we hope to foster progress in theoretical innovation, technological breakthroughs, and system applications within this domain.

Topics of interest include, but are not limited to:

- Trajectory planning and guidance law design for interception
- Intelligent perception and target recognition in adversarial environments
- Machine learning-based adaptive and robust control
- Intelligent cooperative strategies and multi-agent swarm game theory for multiple interceptors

- Autonomous decision-making and human-in-the-loop hybrid intelligent control systems
- Navigation countermeasures against jamming and high-precision positioning for interception missions
- Algorithm verification, simulation testing, and experimental studies in realistic environments
- Integration of relevant software/hardware systems and innovative application

We cordially invite colleagues from all relevant fields to submit contributions and participate. Together, we will explore how AI technologies can enhance the autonomy, intelligence, and overall effectiveness of interception systems to address the emerging challenges of future airspace security.