

**IEEE INTERNATIONAL CONFERENCE ON
ADVANCED MOTION CONTROL (AMC 2026)**

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**Special Session “Intelligent Control and Emerging Applications for
Next-Generation Autonomous Robotic Systems”**

organized by

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Call for Papers

With the vigorous development of fundamental theory, advanced technology, and intelligent devices, autonomous robot systems such as aerial vehicles, bionic robots, surface vessels, and underwater vehicles, etc., are playing increasingly vital roles across a wide range of real-world applications, including but not limited to logistics and transportation, precision agriculture, intelligent manufacturing, environmental monitoring, and smart healthcare. Despite their promising application prospects and growing practical demands, traditional control methods often face significant challenges and limitations in ensuring safety, adaptability, and efficiency due to unstructured, dynamic, and unpredictable environments. These problems have intensified the need for innovative research and the development of next-generation autonomous robotic systems. To effectively address these challenges, this special session focuses on advancing intelligent control and its emerging applications in next-generation autonomous robotic systems. By showcasing cutting-edge research and practical solutions in these areas, we aim to provide a collaborative platform for researchers and practitioners to exchange the latest findings, share insights, and collectively plan the future direction of intelligent autonomous robotics.

Topics of the Session

- Advanced AI technologies and frontier applications in autonomous robotic systems.
- Swarm/formation intelligent control for collaborative multi-robot systems.
- Multi-sensor fusion, resource-constrained, and perception-driven control techniques.
- Cutting edge technologies for positioning, navigation, and control of next-generation intelligent robots.
- Robot intelligent control based on human-computer interaction and advanced reinforcement learning.
- Emerging applications of intelligent robots in fields such as precision agriculture, transportation logistics, geological monitoring, and disaster relief.
- Human-in-the-loop intelligent control techniques for next generation assistive robots.
- Data-driven and intelligent fault-tolerant controls for autonomous robotic systems.
- Estimation, compensation, and suppression of multi-source disturbances for autonomous robots in harsh environments;
- Some other topics closely related to this theme.

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