IEEE International Conference on Advanced Motion Control (AMC 2026)

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Precision Motion Control Technologies for High-Performance Mechatronic Systems

organized by

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Call for Papers

In an increasingly information-driven society, the demand for high-performance mechatronic systems—such as hard disk drives, semiconductor manufacturing equipment, and advanced robotics—continues to grow. These systems require sophisticated motion control technologies capable of achieving fast, accurate, and stable control of position, velocity, and force. Such capabilities are enabled through the integration of intelligent control algorithms, high-resolution sensing, and innovative actuation mechanisms.

This proposed special session aims to bring together leading researchers and practitioners from academia and industry to discuss recent advances in precision motion control. The session will focus on theoretical developments, modeling techniques, and practical implementations that contribute to the performance and reliability of mechatronic systems in various industrial applications. Topics of interest include, but are not limited to, robust and adaptive control, data-driven control strategies, sensor fusion, and actuator design for precision motion systems.

By fostering interdisciplinary dialogue, this session seeks to promote collaboration across control engineering, mechanical design, and information technologies. It will provide a platform for exchanging ideas, identifying emerging challenges, and exploring future directions in motion control research. Ultimately, the session aims to contribute to the development of technologies that support the infrastructure of modern society and enhance the quality of life through innovation in mechatronic systems.

Topics of the Session

- High-performance actuators and sensors in motion control systems
- High precision positioning techniques in industrial mechatronic systems
- Nanoscale servo systems in industrial applications
- Mass storage control systems
- Innovative control strategies in advanced motion control
- Modeling and compensation techniques for nonlinearities in industrial mechatronic systems
- Robust and/or adaptive controller algorithms, sensor fusion, and novel mechanical design

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