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**IEEE TRANSACTIONS ON**  
**Automation Science and Engineering**

**Special Issue on Wheeled/Legged Actuated Humanoid Locomotion and Manipulation for Industrial Manufacturing Automation/Laboratory Automation**

With the rapid developments of material technology, computation and artificial intelligence, humanoid robotics, especially wheeled/legged actuated, has shown great potential in applications in terms of controllability, adaptability, and flexibility for industrial manufacturing automation. In doing so, researchers may employ model-based methods and learning-based methods for task planning, motion planning, policy learning, and control to address the above issues, and challenges, particularly in terms of mechanism design, dynamic and multimodal perception, high quality large-scale robot data, control optimization and high inference cost, etc. Humanoid locomotion and manipulation provide multiple advantages in this emerging field, including advanced cognitive and autonomous capabilities. However, the reliability and safety of humanoid robots are complex issues, for which no meaningful quantitative measure currently exists. The regulatory and standardization of humanoid robots are still inadequate. This limits the deployment of humanoid robots in real-world industrial manufacturing automation.

In this issue, we encourage submissions which can provide real-world case studies, benchmarking frameworks, and open datasets. We invite researchers from academia and industry share their latest research findings as related to recent advances in such emerging topics, including but are not limited to the following:

- Locomotion and manipulation in Industrial Manufacturing Automation
- Tactile sensing in Industrial Manufacturing Automation
- Model predictive control in Industrial Manufacturing Automation
- Whole-body control for humanoid robotics in Industrial Manufacturing Automation
- Mechanical design of humanoid robotics
- Learning loco-manipulation skills in Industrial Manufacturing Automation
- Foundation models for humanoid robotics
- Artificial intelligence approaches and their Industrial Manufacturing Automation applications
- Regulatory and standardization theory in Industrial Manufacturing Automation
- Methods of Industrial Manufacturing Automation deployment, safety, and reliability
- Industrial Manufacturing Automation applications for dual arm robots
- Manipulation of dexterous robotic hands in Industrial Manufacturing Automation
- Approaches and applications in Laboratory Automation through advanced manipulation
- Other related topics in Industrial Manufacturing Automation for humanoid robotics

**Important Dates**

- Paper submission deadline: Oct. 1, 2025
- Completion of the first round review: Dec. 1, 2025
- Completion of the second round review: Feb. 1, 2026
- Final submission due: March 1, 2026
- Tentative publication date: May 2026

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