CALL FOR PAPERS - SPECIAL SESSION

"AI-Based Perception and Decision-Making for Mobile Robots"

for CODIT 2026

July 13-16, 2026 ▪ Bari, Italy

Session Co-Chairs:

Prof. Dr. Gokhan Erdemir, The University of Tennessee at Chattanooga, Chattanooga, TN, USA - (email: gokhan-erdemir@utc.edu)

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Session description:

This special session addresses the fundamental challenge of integrating artificial intelligence–based perception with decision-making and control architectures for autonomous mobile robotic systems. As mobile robots increasingly operate in complex, dynamic, and unstructured environments, robust autonomy requires the seamless fusion of high-level perception and reasoning with low-level feedback control and motion execution.

Recent advances in computer vision, machine learning, and multimodal sensing have significantly improved the ability of robots to perceive and interpret their surroundings. However, translating these rich perceptual representations into reliable, safe, and real-time autonomous behaviour remains an open research problem, particularly when uncertainty, partial observability, and dynamic interactions with the environment must be considered.

The goal of this special session is to bring together researchers from robotics, control, and computer science to present and discuss methods that tightly couple AI-based perception, learning, and decision-making with control and planning for mobile robots. Emphasis is placed on frameworks that enable perception-aware state estimation, learning-enabled control, and intelligent autonomy that can be validated on real robotic platforms.

The topics of interest include, but are not limited to:

- AI-based perception, scene understanding, and semantic mapping for mobile robots
- Multimodal sensor fusion, state estimation, and localization
- Learning-enabled and perception-aware control strategies
- Vision- and LiDAR-driven navigation and motion planning
- Intelligent decision-making, task planning, and behavioWr generation
- Learning-based and model predictive control (MPC) using perceptual feedback
- Robust and safe autonomy under uncertainty and partial observability

- Digital twins for mobile robotic systems and autonomous fleets
- Simulation-driven development, validation, and benchmarking of autonomous robots
- Sim-to-real transfer and domain adaptation for perception and control models
- Experimental validation on real and simulated robotic platforms

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SUBMISSION

Papers must be submitted electronically for peer review through PaperCept by **February 07, 2026:** **http://controls.papercept.net/conferences/scripts/start.pl**. In PaperCept, click on the **CoDIT 2026 link "Submit a Contribution to CoDIT 2026" and follow the steps.**

IMPORTANT: All papers must be written in English and should describe original work. The length of the paper is limited to a maximum of 6 pages (in the standard IEEE conference double column format).

DEADLINES

February 07, 2026: deadline for paper submission

April 30, 2026: notification of acceptance/reject

May 20, 2026: deadline for final paper and registration