

CALL FOR PAPERS

SPECIAL SESSION ON

Embodied AI and Intelligent Robotics for Autonomous Real-World Systems

for the 11th International Conference on Control, Automation and Diagnosis (ICCAD'27)

July 6-8, 2027, Paris, France

Session Co-Chairs:

Prof. Ahmad Taher Azar, IEEE Senior Member

Full professor, College of Computer and Information Sciences, Prince Sultan University, Riyadh, Saudi Arabia.

Leader of Automated Systems & Computing Lab (ASCL), Prince Sultan University, Riyadh, Saudi Arabia

Email: **aazar@psu.edu.sa**

Prof. Haoping Wang

Nanjing University of Science and Technology, Nanjing, China. Email: hp.wang@njust.edu.cn

Prof. Chakib Ben Njima

University of Sousse, Tunisia. Email: chakib.bennjima@ieee.org

Session description:

The field of robotics is changing rapidly. Foundation models, large-scale robot learning, and high-fidelity simulation are giving robots perception, reasoning, and dexterity that were out of reach only a few years ago. Turning these advances into systems that work reliably in the real world still depends on sound control theory, robust estimation, and safety guarantees. The Special Session on "Embodied AI and Intelligent Robotics for Autonomous Real-World Systems" brings together researchers from control, artificial intelligence, and robotics to close this gap.

We welcome theoretical, algorithmic, and experimental contributions on all robot types: mobile and legged robots, manipulators, humanoids, aerial and underwater vehicles, collaborative robots, and multi-robot systems. We especially welcome work that combines learning-based methods with model-based control, demonstrates sim-to-real transfer, provides safety or stability guarantees, or validates results on physical hardware; hardware experiments are welcome but not mandatory. Application papers in manufacturing, healthcare, agriculture, logistics, inspection, and service robotics are also encouraged.

Topics of interest include, but are not limited to, the following:

- ✓ Robot Foundation Models (VLA, LLMs)
- ✓ Sim-to-Real Transfer and Digital Twins
- ✓ Humanoid and Legged Robots
- ✓ AI Perception and Sensor Fusion
- ✓ Motion Planning and Control
- ✓ Aerial, Marine, and Field Robotics
- ✓ Safe and Trustworthy Robot Autonomy
- ✓ Edge AI and Energy-Efficient Robots
- ✓ Reinforcement and Imitation Learning
- ✓ Learning-Based Control with Guarantees
- ✓ Dexterous and Mobile Manipulation
- ✓ SLAM, Localization, and Autonomous Navigation
- ✓ Multi-Robot Systems and Swarm Intelligence
- ✓ Human-Robot Interaction and Cobots
- ✓ Fault Diagnosis and Fault-Tolerant Control
- ✓ Medical, Industrial, and Service Robotics

SUBMISSION

Papers must be submitted electronically for peer review by: **January 31, 2027**

https://www.iccad-conf.com/submission/

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).