CALL FOR PAPERS - SPECIAL SESSION

"Deep Learning and Generative AI for Learning, Optimization and Control Systems"

for CODIT 2026

July 13-16, 2026 ▪ Bari, Italy

Session Co-Chairs:

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Session description:

This special session deals with the problem of bridging the gap between classical control theory and modern artificial intelligence techniques. It explicitly addresses the intersection of "classical control" and "modern control" with advanced "optimization", "learning", and "generative AI" methodologies. As systems become increasingly complex and environments more unstructured, traditional model-based approaches are being augmented or replaced by data-driven strategies. This session explores how Deep Learning (DL) architectures—such as Graph Neural Networks (GNNs) and Transformers—and Generative AI models can be leveraged to enhance decision-making, system identification, and control policy synthesis. The session aims to cover hybrid frameworks that combine the rigorous stability guarantees of control theory with the adaptability and generative capabilities of modern AI.

The goal is to:

The goal is to bring together researchers and practitioners to present innovative solutions that integrate Deep Learning and Generative AI into the feedback loop of control and optimization systems. We aim to discuss how these technologies can solve high-dimensional optimization problems, generate synthetic data for robust training, and create adaptive controllers for dynamic environments. The session will serve as a forum to exchange ideas on the latest developments in Reinforcement Learning (RL), generative modeling for control, and neuro-symbolic approaches, fostering interdisciplinary collaboration in the fields of Control, Decision, and Information Technologies.

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

- Deep Reinforcement Learning (DRL) for Control and Decision Making.
- Generative AI models (GANs, Diffusion Models) for System Identification and Simulation.
- Transformer-based architectures for Time-Series Forecasting and Control.
- Graph Neural Networks (GNNs) for Networked Control Systems and Multi-Agent Systems.

- Physics-Informed Neural Networks (PINNs) for Optimization and Control.
- Neuro-evolution strategies and Hybrid Optimization algorithms.
- Data-driven and Learning-based Model Predictive Control (MPC).
- Safe and Explainable AI in Control Loops.
- Generative design for controller tuning and parameter optimization.
- Applications of Large Language Models (LLMs) in process control and automation logic.
- Real-time implementation of Deep Learning models in embedded control systems.

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