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Politecnico di Torino - Maxwell Room

26th October 2023 - 5.00 PM

Machine learning on ultra-low power devices:
approaches for accurate and energy efficient inference.

*Mr. **Francesco Daghero**, PhD Candidate, DAUIN.*

Machine Learning (ML) is now central to **IoT applications**, offering low latency and privacy benefits through on-device processing. However, constraints on computational and memory resources in IoT devices hinder direct ML model deployment. This presentation explains methods like mixed-precision quantization, binarization, and adaptive inference, optimizing models for embedded systems, reducing energy usage, and maintaining accuracy.

Quantum Computing applications tackling nowadays' problems:
optimising urban traffic mobility case study

*Mr. **Andrea Marchesin**, PhD Candidate, DET.*

Quantum Computing (QC) offers a revolutionary approach to solving complex problems beyond traditional processing systems. A novel research work suggests that applying QC can **improve traffic** flow and reduce congestion in modern cities, bringing benefits to the environment and citizens' quality of life.

Constrained optimization via controlled multipliers

*Mr. **Simone Pirrera**, PhD Candidate, DAUIN.*

We propose a **control theory**-based approach to develop novel **optimization** algorithms for **constrained non-convex problems**. Specifically, we define a continuous-time system that, under a properly defined control action, converges to a feasible stationary point. We design the control action using PI and feedback linearization, and we conduct theoretical analysis to show method's convergence. Finally, we demonstrate the method's practical effectiveness through numerical examples.

DETAILS

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