ELECTRICAL, ELECTRONICS AND COMMUNICATIONS ENGINEERING

PNRR - Sustainable Edge Computing and Machine Learning

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] Politecnico di TORINO [P.iva/CF:00518460019] DET Ulteriori risorse da proventi comm.li e istituzionali
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Context of the research activity	A key driver for the digital transformation of our societies, centered around data-driven automation and real-time interaction, are communication and computing networks, as they will be the enablers for critical services such as autonomous driving, smart industry, AR/VR, and remote medicine. By efficiently enabling such mission- and data-critical services, next-generation networks will play a pivotal role in meeting the UN Sustainable Development Goals, thus allowing for a greener future. However, such services often require low latency, thus they need to be deployed at the edge of the network system, and high reliability, along with massive connectivity and data availability. The research performed within the Ph.D. program will address the above challenges leveraging data-driven and, in particular, machine learning (ML) approaches for the orchestration of computing and network resources, as well as the orchestration and management of intelligent services. Progetto finanziato nell'ambito del PNRR - PNRR M4C2, Investimento 1.3 - Avviso n. 341 del 15/03/2022 - PE0000001 RESearch and innovation on future Telecommunications systems and networks, to make Italy more smart (RESTART) - CUP E13C22001870001
Objectives	To develop effective and efficient ML-based solutions for programmable edge networks and services, the research performed within the Ph.D. program will investigate one of more of the following aspects: - Creation of algorithmic frameworks for an efficient and effective allocation of computing, network, and energy resources; - Deployment and management of intelligent, highly distributed, services and applications;

	- Development of a proof-of-concept testbed for data collection, experimental analysis and measurements; - Definition of techniques for the development of compressed and/or dynamic machine learning models.

Skills and competencies for the development of the activity	The position requires: - a Master degree in Computer Engineering, Telecommunications Engineering, Computer Science, or in relevant related fields - fluency in written and spoken English - enthusiasm for research - at least one of the following: (a) very good programming skills; (b) knowledge of wireless networks; c) applied machine learning, e.g., skills in design and implementation in PyTorch or Tensorflow; (d) data analysis, e.g., background in knowledge discovery from large datasets.