1)

Title: Edge Intelligence for the Next-generation IoT Systems

Abstract:
The Edge Intelligence (EI) paradigm has recently emerged as a promising solution to overcome the inherent limitations of cloud computing (latency, autonomy, cost, etc.) in the development and provision of next-generation Internet of Things (IoT) services. Therefore, motivated by its increasing popularity, relevant research effort was expended in order to explore, from different perspectives and at different degrees of detail, the many facets of EI.
In such a context, the aim of this seminar is first to analyze the wide landscape on EI by providing a systematic analysis of the state-of-the-art manuscripts in the form of a tertiary study (i.e., a review of literature reviews, surveys, and mapping studies) and according to the guidelines of the PRISMA methodology. A comparison framework is, hence, provided and sound research questions outlined, aimed at exploring (for the benefit of both experts and beginners) the past, present, and future directions of the EI paradigm and its relationships with the IoT and the cloud computing worlds.
Second, we discuss our EI research in the context of the device-edge-cloud continuum paradigm developed in the Horizon Europe project "MLSysOps" along with our vision of Digital Twin enabled by EI and applied to Smart City as a new enabler.
Finally, we will focus on our recently introduced methodology, named EdgeMiningSim, a simulation-driven methodology inspired by software engineering principles for enabling IoT Data Mining/Machine Learning. Such a methodology drives the domain experts in disclosing actionable knowledge, namely descriptive or predictive models for taking effective actions in the constrained and dynamic IoT scenario.

2)

Title: Towards Community-Oriented Wearable Computing Systems: A Paradigm Shift to Monitor and Control Cooperative Groups of People based on Collectives of Wearables

Abstract:
Gartner estimates the global smart wearable computing systems (WCS) market will be worth more than US$100 billion in 2024, with an increasing growth caused by the COVID-19. The industry and public sector are then pushing for innovative WCS solutions with high levels of dependability and trustworthiness that can efficiently operate in increasingly complex scenarios. Great strives have been made to realize WCS for the 24/7 monitoring of single users based on 3-tier architectures involving wearables, edge, and cloud systems. However, new requirements, specifically targeting cooperative multiple users, demands for radically new approaches, as promoted by the community-oriented WCS (CO-WCS). In this keynote, we first provide an overview of WCS based on the SPINE Body of Knowledge research and development (https://projects.dimes.unical.it/spine-bok/). Then, we focus on the requirements of the next-generation CO-WCS based on a use case driven approach. Finally, we will discuss models, architectures and tools that would be needed to implement CO-WCS.