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Track: Digital Twins by/for Networking and Communication

Track chairs

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Scope and Motivation

Coupled with the pervasive utilization of artificial intelligence (AI) at all network levels, the Digital Twin (DT) paradigm has been recently deemed as a promising tool for network design, optimization, management, and recovery, in which the DT can be leveraged to realize the vision of sustainable, zero-touch 6G networks. The key principle of the DT paradigm is to create a virtual representation, not only for the physical elements, but also for the dynamics and functions of the network. According to its definition, the DT is envisioned to enable end-to-end digitization of wireless networks, with the aim to perform cost-effective, adaptive, efficient, and fast network-wide optimization of the available resources and infrastructure design. Furthermore, the DT allows the utilization of the digital realm with the aim to develop and test novel schemes and AI algorithms, that are capable of handling previously experienced critical situations or predicted scenarios based on the collected data at the cyber twin, and then to implement them at the physical twin once fully mature.

To realize such vision, there are still many aspects to be taken into account, so this special track seeks novel and innovative contributions related to the use of DTs for networks and communications.

Topics

- Digital Twin-enabled wireless networks.
- Artificial Intelligence and Machine learning for Digital Twin
- Network simulation using Digital Twin

- Security and Privacy in Digital Twin
- Network optimization in Digital Twin
- Digital Twin in Industrial IoT
- Wireless Networks for Digital Twin
- Testbed designs and implementation of Digital Twin in wireless networks
- Digital Twin-Native Edge Intelligence
- Standardization & interoperability of Digital Twin

TPC

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- Marco Picone, University of Modena and Reggio Emilia, Italy
- Federico Chiariotti, University of Padova, Italy
- Walid Saad, Virginia Tech, USA
- Peter Zdankin, University of Duisburg-Essen, Germany
- Octavia Dobre, Memorial University, Canada
- Trung Q. Duong, Queen's Uni. Belfast, UK
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