Call for Papers

The First International Workshop on

SmarTWIN: Data-Driven and AI-Enabled Digital Twin Network and Applications

In

In Conjunction with

IEEE International Black Sea Conference on Communications and Networking (IEEE BlackSeaCom 2023)

4-7 July 2023 (Istanbul, Turkey)

https://blackseacom2023.ieee-blackseacom.org/

The Digital Twin (DT) is continuously becoming a top strategic technology that connects the physical and digital worlds, assisted by next-generation networks. It is defined as an accurate virtual replica of system objects in real time. DT enables the selection of the best solution by checking all the possible scenarios in complex systems, which is not currently available in traditional simulations and evaluations. It is possible thanks to the two-way data communication between physical objects and digital models. DT has taken the world by storm due to its multiple benefits and deployment in interdisciplinary applications such as real-time remote monitoring in healthcare, industrial control systems, and predictive maintenance in aerospace. Real-time network monitoring, performance testing, optimization, and fast simulation are some examples that exploit DT advantages in the communication domain and beyond. Furthermore, DT can deliver seamless analysis, monitoring, and predictions between digital and virtual counterparts of real-world systems when it is used together with next-generation mobile communications (5G/6G), Virtual Reality (VR), Internet of Things (IoT), Artificial Intelligence (AI), Transfer Learning (TL), 3D models, Augmented Reality (AR), distributed computing, and intelligent health applications.

The workshop will invite authors to submit papers presenting new research related to all aspects of DT networks, systems and applications. Topics of interest include, but are not limited to:

- Data-driven and IoT-based DT networks for real-time communication systems
- Real-time communication protocols for DT networks
- DT-enabled health applications
- Wireless communications for cyber-physical DT applications
- DT-assisted generative adversarial network (GAN) and software defined networks (SDN)
- Joint communications and control design and optimization of DT
- New security and privacy concepts within DT
- Trustworthy AI enabled DT applications
- DT-assisted AI applications for smart cities
- Communications protocols for enabling DT deployment in real-world applications
- AI applications of DT systems
- Autonomous and context-aware DT
- Self-organizing DT-enabled IoT systems and applications
- Sustainable AI and DT based approaches
- DT in Edge/Fog/Cloud Computing

- DT for enhanced Mobile Broadband (eMBB), massive Machine Type Communications (mMTC), and Ultra Reliable Low Latency Communications (URLLC) applications
- DT for resource management and network optimization
- Connected networking systems for environmental sensing
- DT for precision agriculture, smart city and industry 4.0 applications
- Real-world DT simulations, prototypes, and testbed demonstrations

General Chairs

- Berk Canberk, Edinburgh Napier University, UK (B.Canberk@napier.ac.uk)
- Müge Erel-Özçevik, Manisa Celal Bayar University, Turkey (muge.ozcevik@cbu.edu.tr)

Technical Program Chairs

- Ouns Bouachir, Zayed University, UAE (Ouns.Bouachir@zu.ac.ae)
- Eirini Eleni Tsiropoulou, University of New Mexico, USA (eirini@unm.edu)
- Elif Bozkaya, National Defence University Naval Academy, Turkey (ebozkaya@dho.edu.tr)

Keynote Speaker

- Basil Manoussos, Edinburgh Napier University, UK (V.Manoussos@napier.ac.uk)

Publicity Chair

- Kübra Duran, Istanbul Technical University, Turkey (durank18@itu.edu.tr)

Tentative Program Committee Members

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Workshop Tentative Schedule

Submission Deadline: April 15, 2023
Review Deadline: May 5, 2023
Notification of Acceptance: May 15, 2023
Camera Ready: May 31, 2023
Program Ready: June 15, 2023