Call for Papers

International Workshop on Digital Twin-Enabled 6G Multi-tier Distributed Computing Systems

Organized in conjunction with

IEEE International Conference on Distributed Computing Systems

16-19 July 2024

Jersey City, New Jersey, USA

Digital Twin (DT) has become a game-changing technology in many AI/ML-driven distributed computing applications leveraging next-generation mobile wireless networks, e.g., 6G, by fully replicating the physical devices and produce real-time interactions to efficiently manage the entire system. DT in multi-tier distributed computing systems enables communication-oriented computing from the cloud-computing-based twin object to the edge-based twin objects by distributing storage/caching, control, and networking capabilities, thus extending the traditional cloud computing architecture to the edge of the network. The new computing model resulting from combining computer-communications and multi-dimensional resources management with multi-tier distributed computing will promote the rapid development of DT and enable efficient task offloading of computation-intensive tasks, so as to realize ultra-reliable and low latency of the interactions between physical and virtual objects. However, attaining the full potential of DT in practical multi-tier distributed computing scenarios is challenging, and there are still many important open research problems, especially from the various perspectives of distributed computing. This workshop aims to provide a forum for the latest advances for DT-enabled 6G multi-tier distributed computing research, innovations, and applications to the distributed computing communities, in order to bridge the gap between theory and applications. We solicit high-quality original research papers on the topics which include, but are not limited to:

- Fundamental limits and performance analysis of resource allocation for DT-enabled 6G multi-tier distributed computing
- Machine learning aided DT in 6G multi-tier distributed computing
- Joint optimal design of signal processing, computing, communications for DT-enabled 6G multi-tier distributed computing
- Security and privacy issues of DT-enabled 6G multi-tier distributed computing
- Testbeds for DT-enabled 6G multi-tier distributed computing
- Federated learning for DT in multi-tier distributed computing systems
- Over-the-air computation for DT in multi-tier distributed computing systems
- Twin models and optimization in multi-tier distributed computing systems

Submission Procedure

Submitted papers must represent original material which is not currently under review in any other conference or journal and has not been previously published. Paper length should not exceed **six**-page standard IEEE conference two-column format (including all text, figures, and references). Please see the Author Information page for submission guidelines in the IEEE ICDCS 2024 website. All papers should be submitted through Esaychair (https://easychair.org/conferences/?conf=icdcs2024) and will go through a peer review process. All accepted and presented papers will be included in the IEEE ICDCS 2024 proceedings and IEEE digital library. IEEE reserves the right to exclude an accepted and registered but not presented paper from the IEEE digital library.

Important Dates

Paper submission deadline: March 25, 2024
Author notification: April 27, 2024
Camera ready: May 10, 2024

General Chair:

Xi Zhang, Texas A&M University, College Station, U.S.A.

TPC Chairs:

Kunlun Wang, East China Normal University, China

Steering Committees:

Xi Zhang, Texas A&M University, U.S.A. (Chair)
Yuanyuan Yang, State University of New York at Stony Brook, U.S.A.
Dusit Niyato, Nanyang Technological University, Singapore
Octavia A. Dobre, Memorial University, Canada
Trung Q. Duong, Memorial University, Canada
George K. Karagiannidis, Aristotle University of Thessaloniki, Greece
Yang Yang, Hong Kong University of Science and Technology (Guangzhou), China
Jie Li, Shanghai Jiao Tong University, China

Potential Keynote Speakers (proposed, to be confirmed)

Prof. Xi Zhang, Texas A&M University, U.S.A. (xizhang@ece.tamu)
Prof. Trung Q. Duong, Memorial University, Canada (tduong@mun.ca)
Prof. Yang Yang, Hong Kong University of Science and Technology (Guangzhou), China (yyiot@hkust-gz.edu.cn)