

# 2024 IEEE 24th International Conference on Communication Technology

## Special Session 1. Digital Twin Online Channel Modeling: Theories, Measurements, and Applications

Future wireless communication is oriented to realize three-dimensional (3D) wide-area space-air-ground-sea global coverage. Base stations and users tend to move in 3D continuous spaces, while antennas and propagation environments are deeply coupled. This paradigm shift brings challenges to channel modeling, antenna design, and wireless transmission system optimization, as well as novel air interface technologies and innovative algorithms. In addition, traditional offline network optimization is unlikely to remain effective for future networks, with most networks only achieving part of their potential performance, leaving significant room for improvement. Digital twin (DT), a virtual replica of physical systems, enables real-time monitoring, analysis, and optimization for enhanced decision-making and operational efficiency. Assisted by DT, it is possible to establish virtual mappings of diverse physical systems including communication systems. This possibility promotes the development of novel paradigms for channel modeling, contributing to a more profound understanding of signal transmission processes in wireless channels. Consequently, this approach furnishes more precise references and guidance for emerging antenna optimization methods, novel air interface technologies, and innovative algorithms. To ignite further innovation and explore promising research avenues in this rapidly advancing field, this workshop endeavors to engage global experts and professionals, seeking recent advances in digital twin online channel modeling and fostering a collaborative environment for knowledge sharing.

## Topics

This special session invites high-quality submissions with innovative ideas, insights, methodologies, modeling/learning frameworks, and simulation/implementation results on applying DTs in future channel modeling. The topics of this workshop include but are not limited to:

01. Theories for DT online channel modeling
02. DT enabling technologies for future networks
03. DT network synchronization
04. DT simulation/implementation for future networks
05. Novel channel modeling methodologies
06. DT-assisted network optimization
07. DT-assisted channel estimation method
08. DT-assisted antenna design and optimization
09. DT-assisted air interface design and optimization
10. DT-assisted algorithms for wireless communications
11. Measurement and channel modeling for non-terrestrial network
12. Measurement and modeling of advanced antenna technologies
13. Measurement and channel modeling for integrated sensing and communications

### Submission Deadline

August 20, 2024

### Notification Date

September 15, 2024

## Special Session Chairs



**Cheng-Xiang Wang**

Southeast University, China



**Ying Liu**

Xidian University, China



**Linglong Dai**

Tsinghua University, China



**Xiaojun Yuan**

University of Electronic Science and  
Technology of China, China



**Shaobo Wang**

Huawei Technologies, China

## Submission Instruction

**Submission Link** <https://easychair.org/conferences/?conf=icct2024> and select Track 1

Template Paper (Word): <https://icct2024.com/IEEEtemplate-word.doc>

Template Paper (LaTeX): <https://icct2024.com/ieee-conference-latex-template.zip>

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