Special Session 11: AI/ML-driven Communications and Networking

Chairs: Wei Wang, Beijing University of Posts and Telecommunications, China.
Yanli Yuan, Beijing Institute of Technology, China.
Liyazhou Hu, Shenzhen Polytechnic University, China.

Brief Description of the Session

Currently, billions of crucial data are carried over communication networks due to emerging applications and intelligent devices. On the one hand, emerging applications require various transmission qualities for network traffic, such as low latency, reliability, and determinacy. On the other hand, emerging intelligent devices drive the explosive growth of network traffic. They are both pushing the current communication network infrastructure to its limitations in terms of capacity, latency, and security performance. To accommodate the mentioned emerging requirements, it is in urgent need of an upgrade for a more robust network infrastructure. However, this process will be very challenging due to the limitations of existing traditional techniques in current communication networks. These issues are addressing an urgent demand for more intelligent control and optimization with effective AI/ML techniques in future communication networks.

AI/ML techniques have already achieved great success in image identification, video recognition, natural language processing, etc. It also provides a vast set of tools and design principles to facilitate automation and intelligence in different aspects of future communication networks, including signal detection, channel modeling, traffic prediction, network optimization, resource management, etc. This symposium seeks high-quality technical articles from both industry and academic to address current research challenges and provide innovative solutions for the design, management, and optimization of communications in future networks leveraging AI/ML techniques.

Topics

- AI/ML-driven optimization for communications
- Lightweight AI/ML-driven algorithms for communications
- New AI/ML models and algorithms for future communication networks
- Distributed AI/ML algorithms for future communication networks
- AI/ML-enabled novel applications in future communication networks
- AI/ML-driven protocol design and security issues for future networks

Brief Introducation of Chair and Co-chairs with Photo

- Wei Wang, Beijing University of Posts and Telecommunications, Beijing, China.

Wei Wang (Member, IEEE) received the Ph.D. degree in communication engineering from Beijing University of Posts and Telecommunications, Beijing, China, in 2018. He is currently an Associate Researcher and PhD Supervisor at Beijing University of Posts and Telecommunications. He received joint doctoral training at the University of California, Davis. In recent years, he has published more than 80 papers in journals and conferences. He has been granted 34 Chinese invention patents and 4 U.S. invention patents. He serves as the Deputy Director of the BUPT-China Unicom Joint Innovation Center and the Deputy Leader of the Terminal Network Intelligent Computing Technology and Application Working Group of the China Telecom Terminal Industry Association. He is also the major contributor to the release of the Sixth Generation Fixed Network (F6G) White Paper.

- Yanli Yuan, Beijing Institute of Technology, Beijing, China.

Yanli Yuan (Member, IEEE) received the B.S. degree in electronic engineering from the Beihang University, Beijing, China, in 2012, the M.S. degree in electronic science and technology from Beihang University, Beijing, China, in 2015, and the Ph.D. degree in communication engineering from Singapore University of Technology and Design, in 2021. She is currently a Professor and PhD Supervisor at Beijing Institute of Technology. In recent years, she has published more than 30 papers in journals and conferences. Her current research interests include trustworthy machine learning, artificial intelligence security, federated learning.

- Liyazhou Hu, Shenzhen Polytechnic University, Shenzhen, China.

Liyazhou Hu (Member, IEEE) received the B.S. degree in communication engineering from the Minzu University of China, Beijing, China, in 2016, the M.S. degree in electronic science and technology from Beijing University of Posts and Telecommunications, Beijing, China, in 2019, and the Ph.D. degree in advanced networking from Macau University of Science and Technology, Macau SAR, China, in 2024. She is currently an Assistant Professor with School of Electronics and Communication Engineering, Shenzhen Polytechnic University, Shenzhen, China. Her current research interests include resource optimization, satellite communications and optical network security.