

IEEE EUC 2022 Workshop Proposal on

The Ubiquitous Intelligence for 6G Communications, Networking, and Computing

1. Title of the workshop (Full name and Abbreviation)

Full name: The Ubiquitous Intelligence for 6G Communications, Networking, and Computing Workshop

Abbreviation: UI6G 2022

2. Objectives, scope, and contribution to the main conference

Nowadays, researchers start to conceptualize 6G, with the vision of connecting everything and realizing full synergy and high automation of communications, networking, and computing. In recent years, novel artificial intelligence (AI) technologies have continued to emerge and been integrated with communications, networking, and computing, which bring about the ubiquitous intelligence revolution with emerging fields, such as autonomous driving networks and AI-native wireless communications. In particular, ubiquitous intelligence brings an unprecedented paradigm shift and is expected to be the key enabler of 6G.

However, ubiquitous intelligence is still in its infancy and needs further research. On the one hand, we need to explore the use of emerging AI methods, such as federated learning, reinforcement learning, meta-learning, imitation learning, and multi-task learning, etc., to design and optimize 6G communications, networking, and computing systems in a more efficient and accurate way. On the other hand, AI technologies also require flexible communication, network, and computing resource utilization, which poses challenges to the practical implementation of AI algorithms in 6G systems.

To promote the research of ubiquitous intelligence for 6G, this workshop solicits original work of emerging ideas, approaches, theories, frameworks, and practices to tackle the challenging issues related to Ubiquitous Intelligence for 6G Communications, Networking, and Computing. Topics of interest include, but are not limited to:

- Novel theories, concepts, and paradigms of the convergence of AI, communications, networking, and computing
- Integrated communication, networking, and computing design for 6G
- AI-enabled end-edge-cloud collaborative computing for 6G
- Space-air-ground integrated networking for 6G
- Distributed machine learning-for 6G
- AI-enabled multi-dimensional resource management
- Security and privacy protection in 6G
- AI-enabled deterministic network traffic scheduling in 6G
- Meta-learning and meta reinforcement learning in 6G
- Edge intelligence in 6G
- Digital twin and metaverse in 6G
- Testbed design for AI-enabled 6G communications, networking and computing system

3. Short bio of the key organizers and their experience on conference/workshop organization

Weiting Zhang is an Associate Professor with the School of Electronic and Information Engineering, Beijing Jiaotong University. He earned the Ph.D. degree in Communication and Information Systems with the Beijing Jiaotong University, Beijing, China, in 2021. From Nov. 2019 to Nov. 2020, he was a visiting Ph.D. student with the Department of Electrical and Computer Engineering, University of Waterloo, Canada. His research interests include industrial Internet of Things, deterministic network, mobile edge computing, and machine learning for wireless networks. He has published more than 20 research papers in leading journals and flagship conferences. He is now serving as session chair and TPC members for many international conferences.

Haixia Peng received the Ph.D. degrees in Computer Science and Electrical and Computer Engineering from Northeastern University, Shenyang, China, in 2017, and the University of Waterloo, Waterloo, ON, Canada, in 2021, respectively. She is currently an Assistant Professor with the Department of Computer Engineering and Computer Science, California State University Long Beach, Long Beach, CA, USA. Her current research interests include satellite-terrestrial vehicular networks, multi-access edge computing, resource management, and reinforcement learning. She was the TPC Member in IEEE VTC-fall 2016 & 2017, IEEE ICCEREC 2018, IEEE Globecom 2016-2022, and IEEE ICC 2017-2022 conferences.

Chuan Zhang is an Assistant Professor with the School of Cyberspace Science and Technology, Beijing Institute of Technology. He earned the Ph.D. degree in Computer Science and Technology with the Beijing Institute of Technology, Beijing, China, in 2021. From Sept. 2019 to Sept. 2020, he worked as a visiting Ph.D. student with the BCCR Group, Department of Electrical and Computer Engineering, University of Waterloo, Canada. His research interests include secure data services in cloud computing, applied cryptography, machine learning, and blockchain. He has published more than 30 research papers in leading journals and flagship conferences. He is now serving as TPC members for many international conferences.

Enfang Cui is currently pursuing his Ph.D. degree at the School of Electronic and Information Engineering, Beijing Jiaotong University, Beijing. His research interests mainly focus on artificial intelligence, edge computing, and digital twin. He has published more than 10 research papers in leading journals and flagship conferences such as IEEE Vehicular Technology Magazine, IEEE Transactions on Green Communications and Networking, IEEE HPCCC, etc.

4. Procedures for selecting papers, plans for advertising call for papers

1) A plan for advertising call for papers:

The Workshop Organizers plan to advertise the call for papers (CFP) through their relevant professional and personal networks. Besides advertising, the Workshop Organizers intend to invite distinguished researchers that are active in the focus areas of this special issue to submit their recent work for possible inclusion in the issue, such as:

- Prof. Lin Cai, University of Victoria, Canada
- Prof. Cailian Chen, Shanghai Jiao Tong University, China
- Prof. Xu Chen, Sun Yat-sen University, China
- Prof. Ning Zhang, University of Windsor, Canada

- Prof. Qiang Ye, Minnesota State University, USA
- Prof. Haibo Zhou, Nanjing University, China
- Prof. Nan Cheng, Xidian University, China
- Prof. Haipeng Dai, Nanjing University, China
- Prof. Jie Gao, Marquette University, USA
- Prof. Ruilong Deng, Zhejiang University, China
- Prof. Mianxiong Dong, Muroran Institute of Technology, Japan

2) A plan for selecting papers:

All submissions will undergo initial screening by the Workshop Organizers for fit to the theme of the workshop. After the submission passes the initial screening, one Workshop Organizer will be assigned to handle it based on their expertise. The Workshop Organizers will make sure that all submissions will be peer reviewed timely by at least three independent reviewers and will be selected on the basis of their quality and relevance to the theme of this workshop. After collecting the reviews of all the submissions, the Workshop Organizers will discuss together about the acceptance on each submission based on the collected reviews.

5. The expected number of participants

We expect **8** participants to attend this workshop.

6. A tentative list of program committee members

Wen Wu, Pengcheng Laboratory, China

Peng Yang, Huazhong University of Science and Technology, China

Mingzhe Chen, Princeton University, USA

Ruiting Zhou, Wuhan University, China

Tianjiao Chen, Beijing University of Posts and Telecommunications, China

Mingyan Li, Chongqing University, China

Yueyue Dai, University of Electronic Science and Technology of China, China

Fuyuan Song, Nanjing University of Information Science and Technology, China

Meilin Gao, Tsinghua University, China

Mushu Li, University of Waterloo, Canada

Chenxi Li, Xidian University, China

Dairu Han, Nanjing University of Science and Technology, China

Mengjie Li, University of Electronic Science and Technology of China, China

Ruibin Guo, Beijing Jiaotong University, China