



School of Data Science
香港城市大學
City University of Hong Kong

Federated Learning and Analysis with Multi-access Edge Computing

Date: 23 July 2024 (Tuesday)

Time: 10:00am - 11:00am

Venue: Rm P4703, Yeung Kin Man Academic Building,
City University of Hong Kong

ABSTRACT

With the maturity of edge computing and the large amount of data generated by IoT devices, we have witnessed an increasing number of intelligent applications in wireless networks. The growing awareness of privacy further motivates the wide study and deployment of federated learning, a collaborative distributed model training framework for predictive tasks. However, a wide range of applications, more broadly relevant to data analytics and query in wireless networks, cannot be well supported by this framework. These applications usually require more complex and diverse aggregation methods, instead of the simple weight aggregations, and are broadly nourished by statistics, information theory, and signal processing, besides machine learning. This talk aims to present the recent advances in federated analytics at the intersection of data science, wireless communication, and security and privacy. We will present the definition, taxonomy, and architecture of the federated analytics techniques. It will also cover several practical and important data analytics tasks in wireless networks, including federated anomaly detection, federated frequent pattern analysis, federated distribution estimation and skewness analytics. Finally, we will present important challenges, open problems, and future directions at the intersection of federated learning/analysis and wireless networks.

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Professor Zhu HAN GUEST SPEAKER'S PROFILE

Prof. Zhu HAN received the B.S. degree in electronic engineering from Tsinghua University, in 1997, and the M.S. and Ph.D. degrees in electrical and computer engineering from the University of Maryland, College Park, in 1999 and 2003, respectively. From 2000 to 2002, he was an R&D Engineer of JDSU, Germantown, Maryland. From 2003 to 2006, he was a Research Associate at the University of Maryland. From 2006 to 2008, he was an assistant professor at Boise State University, Idaho. Currently, he is a John and Rebecca Moores Professor in the Electrical and Computer Engineering Department as well as the Computer Science Department at the University of Houston, Texas. Prof. HAN is an NSF CAREER award recipient of 2010, and the winner of the 2021 IEEE Kiyo Tomiyasu Award (an IEEE Field Award). He has been an IEEE fellow since 2014, an AAAS fellow since 2020, an ACM fellow since 2024, an IEEE Distinguished Lecturer from 2015 to 2018, and an ACM Distinguished Speaker from 2022-2025. Prof. HAN is also a 1% highly cited researcher since 2017.

All are welcome