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11:15am, ITE 336

AI in Next-Generation Open Radio Access Networks (O-RANs)

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Next-generation wireless systems beyond 5G will be defined by openness and intelligence. The Open Radio Access Network (O-RAN) framework embodies these principles through disaggregated architecture, open interfaces, and AI-driven control, enabling innovation and interoperability across vendors. This talk explores how artificial intelligence is transforming O-RAN into an adaptive, self-optimizing platform for intelligent wireless networks.

The talk begins with an overview of the O-RAN framework and its AI integration opportunities, followed by our three recent research contributions. First, the O-RAN Performance Analyzer provides a comprehensive data collection and analysis system for monitoring xApp behavior, extracting key performance indicators (KPIs), and enabling closed-loop feedback to support reinforcement learning. Second, the LLM-based service provisioning engine automates the end-to-end machine learning pipeline, allowing operators to deploy AI services through natural-language specifications. Third, the Open AI Cellular Test (OAIC-T) framework introduces automated, distributed AI testing to evaluate the performance, robustness, and security of xApps and rApps. Together, these developments establish a unified foundation for closed-loop, AI-native O-RAN systems, advancing the vision of intelligent, trustworthy, and autonomous 6G networks.



Dr. Bo Tang is an Associate Professor in the Department of Electrical and Computer Engineering at Worcester Polytechnic Institute. Prior to this, he was an Assistant Professor in the Department of Electrical and Computer Engineering at Mississippi State University (MSU) from 2017 to 2022, where he received the Emerging Research Scholar Award, the highest award and honor for assistant professors at MSU. His research focuses on bio-inspired artificial intelligence (AI), AI security, and their applications in next-generation wireless networks. He received his Ph.D. degree from the University of Rhode Island in 2016. Dr. Tang is a Senior Member of IEEE and an Associate Editor for IEEE Transactions on Neural Networks and Learning Systems. Dr. Tang is also the recipient of the prestigious NSF CAREER Award in 2021 and NIH New Investigator/Early Career Award in 2019.

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