

AI for 5G-Advanced towards 6G

Abstract:

We have entered the era of AI, brought about by three converging forces, including the availability of big data, the invention of deep learning algorithms, and high-performance computing accelerated by GPU. Meanwhile, 5G mobile communication systems are becoming increasingly complex due to the adoption of advanced technology features and the need to support various services with stringent performance requirements. AI has emerged as a powerful technology that improves system performance and enables new functions in 5G-Advanced and 6G. As 3GPP is ramping up AI items for the 5G-Advanced evolution, we anticipate that AI adoption in mobile networks will accelerate beyond proprietary solutions in the coming years. This talk will provide a state-of-the-art overview of AI use in mobile networks by describing the basic concepts, reviewing the recent key advances, discussing details of the 3GPP standardization aspects, and sharing various design rationales influencing standardization.

Short Bio:

Xingqin Lin is a Senior Standards Engineer at NVIDIA, leading 3GPP standardization and conducting research at the intersection of 5G/6G and AI. Before joining NVIDIA, he was with Ericsson, leading 5G/6G research and standardization in focus areas. He was a member of the Ericsson NextGen Advisory Board, collaborating with Ericsson Executive Team on strategic projects. He is an expert in wireless communications and technology strategy and a key contributor to 5G NR, NB-IoT, and LTE standards. His pioneering work has led to strategic opportunities, products, and real-world deployments in the telecom industry, enabling major network transitions from 4G to 5G. He is co-author of the book "Wireless Communications and Networking for Unmanned Aerial Vehicles" and the lead editor for the book "5G and Beyond: Fundamentals and Standards." He has published 80+ refereed papers and contributed to 200+ patent applications, including standards essential inventions. His publications have been cited over 7,000 times.

He has garnered several awards, including the IEEE Communications Society Fred W. Ellersick Prize (2021), IEEE Vehicular Technology Society Early Career Award (2021), IEEE WCNC Best Paper Award (2020), and IEEE Communications Society Best Young Professional Award in Industry (2020), among others. He was included in the list of AI 2000 Most Influential Scholars in the field of Internet of Things (2021 & 2022) and the list of the World's Top 2% Scientists (2020 & 2021). He serves/served as an editor of the IEEE Communications Letters (2015-2018), IEEE Communications Magazine (2022-now), IEEE Network (2021-now), IEEE Internet of Things Magazine (2021-now), and a guest editor for the IEEE Communications Magazine Feature Topic on "Aerial Communications," IEEE Wireless Communications Special Issue on "AI-Powered Telco Network Automation: 5G Evolution and 6G," and IEEE Journal on Selected Areas in Communications special issue on "3GPP technologies: 5G-Advanced and beyond." He is an IET Fellow, an IEEE Senior Member, and an IET Fellow Assessor. He holds a Ph.D. in electrical and computer engineering from The University of Texas at Austin, USA.