

Backscatter Communication Security

In backscatter communications (BC), backscatter devices harness Radio Frequency (RF) signals for energy harvesting, enabling ultra-low power consumption during communications. The BC has attracted considerable attention in both academia and industry. It has wide-range of applications in the fields of Internet of Things (IoT), healthcare, finance, and so on. Nevertheless, the backscatter devices face special constraints due to limited capability and signal reflection for communications, giving rise to novel challenges that demand in-depth investigation into security and reliability. This talk delineates the prevailing shortcomings and obstacles in BC, alongside my team's achievements in realms like physical layer authentication, physical layer key generation, system resource optimization and secure communication. Lastly, perspectives for advancing the future of backscatter communication will be presented.



Dr. Zheng Yan, Distinguished Professor at Xidian University, is an IEEE Fellow, IET Fellow, AAIA Fellow, and AIIA Fellow. She is a Stanford World top 2% scientist, a Finnish Academy Fellow, and a highly cited researcher by Elsevier in China. Her research interests are in trust management, information and network security, privacy protection, and data analysis. She has published over 390 papers in prestigious journals and conferences worldwide, including IEEE SP, IEEE TIFS, IEEE TDSC, INFOCOM, and ICSE, with over 270 as first or corresponding author. She has authored two English books used for teaching for nearly a decade. She holds 110 international and domestic patents, including 50 PCT patents (with 30 independent inventions), with more than 130 patents adopted by industry, some of which have entered international standards or are widely used. Her U.S. patents are tracked by over 60 Fortune Global 500 companies. She has received numerous awards, including the Nokia Distinguished Inventor Award, three EU awards, N²Women Star in Computer Networking and Communications, IEEE TCSC Award for Excellence in Scalable Computing, IEEE TEMS Distinguished Leadership Award, 17 IEEE Outstanding Leadership and Service Awards, AALTO ELEC Impact Award, IEEE ComSoc Big Data Technical Committee Best Journal Paper, IEEE TrustCom Outstanding Paper, Shaanxi Natural Science Award, and Outstanding Doctoral Dissertation Supervisor by the Electronic Association. She founded the first IEEE Blockchain International Conference and serves as a Steering Committee Co-chair. She serves as an Executive Editor-in-Chief of Information Sciences and Area Editor/Associate Editor/Editorial Board Member of over 60 journals, including ACM Computing Surveys, Information Fusion, IEEE IoT Journal, IEEE Network Magazine, etc. She has served as a General Chair or Program Committee Chair for over 40 international conferences and has delivered about 30 keynote and invited speeches at international conferences and renowned enterprises.