Photo

Shisheng Guo

University of Electronic Science and Technology of China, China

Bio:

Shisheng Guo received the B.S. degree in communication engineering from the Nanchang Hangkong University, Nanchang, China, in 2013, and the Ph.D. degree in signal and information processing from the University of Electronic Science and Technology of China (UESTC), Chengdu, China, in 2019. He is currently an Associate Research Fellow with the School of Information and Communication Engineering, UESTC. He was supported from the National Natural Science Foundation of China (Grant No. 62001091). His research interests include through-the-wall radar and radar based NLOS target detection. He is a Member of IEEE, the Session Co-chair of ICAUS 2021, ICAUS 2022 and 2019 ICCAIS.

Speech Title:

NLOS Targets Detection with Radar: Mechanism and Technological Progress

Speech Abstract:

Target surveillance in urban environments is important for various applications, such as urban battles, rescues, and antiterrorism. When the target is hidden in non-line-of-sight (NLOS) areas formed by building structures (e.g., street corners and urban intersections), the direct signals will be blocked by the obstacles completely. In such a blind NLOS case, the traditional through-the-wall radar using electromagnetic wave penetration characteristics is unable to detect the target. Different from the traditional through-the-wall radar, a NLOS detection method based on the diffraction and reflection characteristics of electromagnetic waves has appeared and is of concern. Specifically, this report will analyze the diffraction and reflection propagation mechanisms of electromagnetic waves in uniform medium space and demonstrate the multipath propagation model of electromagnetic waves in different building layouts with electromagnetic simulation software. In addition, several recently NLOS target location algorithms are presented. Both numerical and experimental results are also demonstrated the performance of the NLOS location algorithm.