



IEEE Systems Council Chapter presents IEEE Distinguished
Lecture Series on

The Advantages and Challenges of MIMO Radar for Autonomous Driving

Speaker: Dr. Shunqiao Sun, Aptiv Technical Center

Date: *March 29, 2019 (Fri)*

Time: *12:30 – 1:30 PM*

Location: *VEC 424, CSULB*

Abstract: Radar not only has found widespread application in advanced driver assistance systems (ADAS) but also is one of the key technologies to enable environmental perception for autonomous driving under all kinds of weather conditions. Today, a typical self-driving car has been equipped with more than 10 radars, enabling a radar-based 360 degree surround sensing. The radar sensors with high resolution and multi-functionality are highly demanded for autonomous driving. As compared to traditional phased-array radar system with the same number of transmit and receive antennas, multiple-input multiple-output (MIMO) radar achieves significantly improved spatial resolution by exploiting waveform diversity. MIMO radar technology has been receiving considerable attention in designing millimeter-wave radar sensors. In the talk, we will review the fundamentals of MIMO radar, highlighting the features that make this technology a good fit for automotive radars which are required to be high resolution. Topics will be discussed in this talk include radar waveform orthogonality, sparse array design, high resolution angle finding with compressed sensing, imaging radar, interference mitigation, radar machine learning and cybersecurity in connected and autonomous vehicles.

About Speaker:

Shunqiao Sun received the Ph.D. degree in Electrical and Computer Engineering from Rutgers, The State University of New Jersey in 2016. He is currently with the radar core team of Aptiv, Technical Center Malibu, CA where he is working on advanced radar signal processing and machine learning algorithms for self-driving cars. In the past, he held internships at Mitsubishi Electric Research Labs (MERL), Cambridge, MA and Cisco Systems, Shanghai, China. His research interests lie at the interface of statistical and sparse signal processing with mathematical optimizations, MIMO radar, machine learning, and smart sensing for autonomous vehicles. Dr. Sun has been awarded the 2015-2016 Rutgers University ECE Graduate Program Academic Achievement Award. He is also the winner of 2016 IEEE Aerospace and Electronic Systems Society Robert T. Hill Best Dissertation Award for his thesis "MIMO Radars with Sparse Sensing". He is a Senior Member of the IEEE.

Light refreshment will be served. For more information, please contact: Dr. Sean Kwon at Sean.Kwon@csulb.edu