The School of Electrical and Computer Engineering
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2019

The Distinguished Seminar Series of the School of Electrical and Computer Engineering (ECE) presents the work of internationally recognized researchers. This seminar series is intended to provide an open platform for the faculty & students to have a dialog with leading researchers in various fields of ECE, and to build a dynamic and vibrant culture of research and academic exchange in the ECE department. All seminars are free and open to the public.

ECE

Sensor Fusion and Its Applications in Autonomous Vehicles, Augmented Reality and Robotic Grasping

2:00 - 3:00 p.m. Tuesday, October 22 | ATRC 102

Dr. Dezhen Song

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Abstract: Combining multiple sensor modalities to achieve more robust understanding of environment and robot status is an emerging research area in robot navigation and autonomous driving. To fuse sensors, such as camera, lidar, inertial measurement unit (IMU), wheel encoder, etc., one must solve problems in synchronization, calibration, signal correspondence, and data fusion. In this talk, first, I will discuss the recent progress that we have made in sensor fusion to address many problems in autonomous driving and robot navigation using autonomous motorcycle and NASA Robonaut as examples. Second, I will discuss how development of augmented reality on mobile devices benefits from the sensor fusion approach in robotics. Third, I will address perception challenges after sensory data are collected from individual modalities may limit perception potential. I will talk about sensor fusion at device level, where we combine different sensory modalities into a single device to achieve new promising capabilities in applications such as underwater communication & ranging, and robotic grasping.

Speaker Bio: Dr. Dezhen Song received his Ph.D. in 2004 from University of California, Berkeley; M.S. and B.S. from Zhejiang University in 1995 and 1998, respectively. Song's primary research area is robot perception, networked robots, visual navigation, automation, and stochastic modeling. He received the NSF Faculty Early Career Development (CAREER) Award in 2007. From 2008 to 2012, Song was an associate editor of IEEE Transactions on Robotics (T-RO). From 2010 to 2014, Song was an Associate Editor of IEEE Transactions on Automation Science and Engineering (T-ASE). Song is currently a Senior Editor for IEEE Robotics and Automation Letters (RA-L), and a multimedia Editor and chapter author for Springer Handbook of Robotics. Dezhen Song has been PI or Co-PI on more than $14 million in grants including more than $4 million from the NSF. His research has resulted in one monograph and more than 100 refereed conference and journal publications. Dr. Song received the Kayamori Best Paper Award of the 2005 IEEE International Conference on Robotics and Automation.
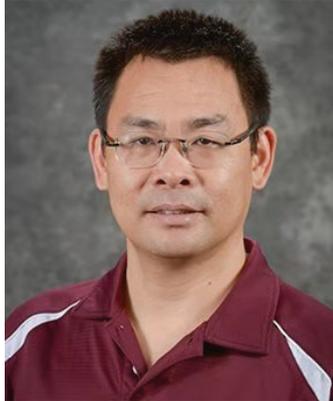
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Refreshments and drinks will be offered after the seminar.

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