MON, FEB 22, 2016
10:00am-11:00am
EGR BLDG 2 RM W122

MULTI-SCALE ROBOTICS AND AUTOMATION

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ECE SPEAKER SERIES

Abstract:

Meso to nano-scale systems technology is an extremely strong economic driver today. Market estimations predict large innovations in new products involving this technology within the next decade and more specifically, meso and micro-scale manipulation and assembly shows enormous potential in a vast range of manufacturing and biological applications. Thus, the Multi-Scale Robotics & Automation Lab (MSRAL) at Purdue University performs cutting-edge research on robotic and automation systems at various length scales: macro-scale (cm to m), meso-scale (~100's of um to a few mm's), micro-scale (10's of um to 100's of um), and nano-scale (nm). In this talk, I will discuss some recent MSRAL projects on: 1.) multi-scale robotic manipulation and assembly; 2.) wireless mobile microrobots driven by external magnetic fields, and 3.) a novel, fully actuated, micro aerial vehicle design and associated control schemes for 3D manipulation tasks.

Biography:

David J. Cappelleri is an Assistant Professor in the School of Mechanical Engineering at Purdue University in West Lafayette, IN. Prior to joining Purdue, he was an Assistant Professor in the Department of Mechanical Engineering at Stevens Institute of Technology, Hoboken, NJ. Prof. Cappelleri founded the Multi-Scale Robotics & Automation Lab that performs cutting-edge research on robotic and automation systems at various length scales. Prof. Cappelleri is a recipient of the National Science Foundation CAREER Award (2012), Harvey N. Davis Distinguished Assistant Professor Teaching Award (2010) and the Association for Lab Automation (ALA) Young Scientist Award (2009). He was selected for and participated in the National Academy of Engineering Frontiers on Engineering Education Symposium in 2011 and the German-American Frontiers of Engineering Symposium in 2015 jointly sponsored by the Alexander von Humboldt Foundation and the National Academy of Engineering. Prof. Cappelleri is an elected member of the IEEE Robotics and Automation Society Technical Committee on Micro/Nano Robotics and Automation, ASME Design Engineering Division Mechanisms & Robotics Committee, and the ASME Design Engineering Division Micro/Nano-Systems Technical Committee. He received the B.S. and M.S. degrees in Mechanical Engineering from Villanova University, and The Pennsylvania State University, and a Ph.D. from the University of Pennsylvania in Mechanical Engineering and Applied Mechanics.

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