

Webinar of the IEEE TC Micro/Nano Robotics and Automation

The IEEE Technical Committee for Micro/Nano Robotics and Automation launches a series of online seminars. **One selected speaker will present cutting-edge research** in the micro/nano robotics field. Join us **Wednesday November 29th 2023 at 2:30pm UTC**, for one hour. We will welcome:

Prof. David J. Cappelleri

Professor and B.F.S. Schaefer Scholar in the School of Mechanical Engineering and Professor in the Weldon School of Biomedical Engineering (by courtesy) at Purdue University

Title: From MANiACs to Micro-Force Sensing Microrobots: Microrobots for Biomedical Applications



Abstract: 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 μm to a few mm's), micro-scale (10's of μm to 100's of μm), and nano-scale (nm). All of the developed systems are designed to interact with the environment in unique ways. In this talk, I will discuss some recent MSRAL microrobotics projects on developing learned models for 2D micromanipulation tasks, different types of families of wireless mobile microrobots driven by external magnetic fields that we have developed over the years. These include the micro-scale tumbling microrobot (μTUM), magnetically aligned nanorods in alginate capsules microrobots (MANiACs), the micro-force sensing mobile microrobot (μFSMM), work on controlling teams of mobile microrobots, microscale Dual Locomotion Mode Multi-Functional Robots (μDMMFs), and Helical Adaptive Multi-material MicroRobots (HAMMRs) for advanced functionality.

Bio: David J. Cappelleri is a Professor and B.F.S. Schaefer Scholar in the School of Mechanical Engineering and Professor in the Weldon School of Biomedical Engineering (by courtesy) at Purdue University. Prof. Cappelleri founded the Multi-Scale Robotics & Automation Lab (MSRAL) that performs cutting-edge research on robotic and automation systems at various length scales. His research interests include mobile microrobotics for biomedical and manufacturing applications, surgical robotics, automated manipulation and assembly, and unmanned aerial and ground robot



design for agricultural applications. Prof. Cappelleri is currently co-leading a Purdue Engineering Initiative in Autonomous and Connected Systems and is the Purdue site director for the new NSF Engineering Research Center on the Internet of Things for Precision Agriculture (IoT4Ag). Prof. Cappelleri has received various awards, such as the NSF CAREER Award, Harvey N. Davis Distinguished Assistant Professor Teaching Award, the Association for Lab Automation Young Scientist Award, and named the B.F.S. Schaefer Scholar in the School of Mechanical Engineering at Purdue University.

Lab website: <https://multiscalerobotics.org/>

Link for the connection:

<https://cnrs.zoom.us/j/91835683360?pwd=TXUwakJkSVpgeFBFdHdBbVBMR3MwUT09>



More information on the IEEE Technical Committee for Micro/Nano Robotics and Automation webpage:

<https://www.ieee-ras.org/micro-nano-robotics-and-automation/activities>

In case of questions, please contact aude.bolopion@cnrs.fr