

UTC INSTITUTE FOR ADVANCED SYSTEMS ENGINEERING Seminar Series

Monday April 23rd, 2018

1:00 - 2:00PM

UConn, Storrs Campus – ITEB 336

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Mobile Robotic Explorers: Roving Throughout the Solar System

The first half-century of space exploration has seen significant accomplishments by robotic spacecraft that have flown by and orbited planets throughout our solar system. Current and future phases of space science and exploration have a major focus on landing and operating robots on planetary surfaces. Robotic rovers thus far have been used to perform science missions on Earth's moon and Mars, but we have only just begun to explore the types of missions that robots could perform on those surfaces and elsewhere. This talk will examine robotic applications and challenges relevant to terrestrial surface missions on Mars, Earth's moon, asteroids, and potentially other planets and moons in our solar system. This includes an overview of some of the robotics technologies and capabilities employed today and needed for future missions in areas of mobility and manipulation, autonomous navigation and related sensor-based perception, as well as semi-autonomous operation for remote, mobile robotic science and exploration systems.

Eddie Tunstel

Dr. Edward Tunstel holds a Ph.D. in electrical engineering from the University of New Mexico focused on intelligent robot control systems, and prior mechanical engineering degrees from Howard University, with a concentration in robotics. He is an Associate Director of Robotics at United Technologies Research Center (UTRC) involved in incubating a research group to study, develop, and transition relevant technologies for human-collaborative robotics in the context of United Technologies Corporation's business units spanning the aerospace and building industries. For the past decade, he was a Senior Roboticist at Johns Hopkins APL actively researching robotic intelligence, autonomous control, modular open systems, and human-collaborative robotics for national security and space applications. He also served as Space Robotics & Autonomous Control Lead at APL. During the prior two decades, he was with NASA JPL as a Senior Robotics Engineer and Group Leader of its Advanced Robotic Controls Group. There he served as a Mars rover systems engineer for autonomous navigation, and rover engineering team lead for mobility and robotic arm operations on the surface of Mars. He maintains expertise in autonomous field robotics & intelligent systems, in which he has authored over 150 publications and co-edited 4 books. Dr. Tunstel is a Fellow of the IEEE and President of the IEEE Systems, Man, and Cybernetics Society. He is also a member of the IEEE Robotics and Automation Society, NSBE Professionals, and AIAA.

Keywords: Planetary rovers, semi-autonomous robotic systems, planetary surface science and exploration, robotics challenges

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