ECE SPEAKER SERIES

ECE DISTINGUISHED LECTURER

DR. MAGNUS EGERSTEDT

Steve W. Chaddick School Chair and Professor
Electrical and Computer Engineering
Georgia Institute of Technology

Wednesday, April 3, 2019 at 2:00 pm
110 Cummington Mall, ENG 245
Faculty Host: Yannis Paschalidis
Refreshments will be available at 2:00 pm
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LONG DURATION AUTONOMY AND CONSTRAINT-BASED COORDINATION OF MULTI-ROBOT SYSTEMS

Abstract:

By now, we have a fairly good understanding of how to design coordinated control strategies for making teams of mobile robots achieve geometric objectives in a distributed manner, such as assembling shapes or covering areas. But, the mapping from high-level tasks to these objectives is not particularly well understood. In this talk, we investigate this topic in the context of long duration autonomy, i.e., we consider teams of robots, deployed in an environment over a sustained period of time, that can be recruited to perform a number of different tasks in a distributed, safe, and provably correct manner. This development will involve the composition of multiple barrier certificates for encoding tasks and safety constraints in a unified manner, as well as a detour into ecology as a way of understanding how persistent environmental monitoring, as a special instantiation of the long duration autonomy concept, can be achieved by studying animals with low-energy life-styles, such as the three-toed sloth.

Biography:

Dr. Magnus Egerstedt is the Steve W. Chaddick School Chair and Professor in the School of Electrical and Computer Engineering at the Georgia Institute of Technology. He received the M.S. degree in Engineering Physics and the Ph.D. degree in Applied Mathematics from the Royal Institute of Technology, Stockholm, Sweden, the B.A. degree in Philosophy from Stockholm University, and was a Postdoctoral Scholar at Harvard University. Dr. Egerstedt conducts research in the areas of control theory and robotics, with particular focus on control and coordination of complex networks, such as multi-robot systems, mobile sensor networks, and cyber-physical systems. Magnus Egerstedt is a Fellow of the IEEE and has received a number of teaching and research awards, including the Ragazzini Award from the American Automatic Control Council, the Outstanding Doctoral Advisor Award and the HKN Outstanding Teacher Award from Georgia Tech, and the Alumnus of the Year Award from the Royal Institute of Technology.

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