

Control Group Seminar
Tokyo Institute of Technology

Long-Range Autonomy and Constraint-Based Coordination of Multi-Robot Systems

Date: 17:00-18:00 July 9th (Mon.), 2018

Room: S5-207

Prof. Magnus Egerstedt

Electrical and Computer Engineering,
Georgia Institute of Technology



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-range 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 the tasks and safety constraints, as well as a detour into ecology as a way of understanding how persistent environmental monitoring, as a special instantiation of the long-range autonomy concept, can be achieved by studying animals with low-energy life-styles, such as the three-toed sloth.

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Biography :

Magnus Egerstedt is the Executive Director for the Institute for Robotics and Intelligent Machines at the Georgia Institute of Technology and a Professor and the Julian T. Hightower Chair in Systems and Controls in the School of Electrical and Computer Engineering. 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 is a Fellow of the IEEE and a recipient of a number of research and teaching awards, including the Ragazzini Award from the American Automatic Control Council.
