The Center for Control, Dynamical Systems, and Computation
University of California at Santa Barbara
Fall 2009 Seminar Series
Presents

Integrated Modeling and Control of Mixed Human and Robot Teams

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Friday, December 4, 2009, 3:00 – 4:00pm, HFH 1104

Abstract:

The material in this presentation will present recent work being developed at the University of Washington to address the development of control methodologies that naturally encompass groups of agents that are composed of both human and autonomous agents. Prior work by others has considered the use of Drift Diffusion Models to capture decision making trends in two-choice scenarios. Here, an alternate approach is considered based on a decomposition of reward structures into particular basis functions and finite state machine stability analysis. In order to effectively capture the operation of a group of autonomous vehicles with a set of joint tasks, the use of oscillator-based models and control with integrated dynamic communication and delays will be considered. Comparison of the algorithmic methods with human subjects data will be discussed.

About the Speaker:

Kristi Morgansen received a BS and a MS in Mechanical Engineering from Boston University, respectively in 1993 and 1994, an S.M. in Applied Mathematics in 1996 from Harvard University and a PhD in Engineering Sciences in 1999 from Harvard University. Until joining the University of Washington, she was first a postdoctoral scholar then a senior research fellow in Control and Dynamical Systems at the California Institute of Technology. She joined the Department of Aeronautics and Astronautics in the summer of 2002 and is currently an Associate Professor. Professor Morgansen's research interests focus on control methods for nonlinear and coordinated control systems. Current topics include the use of fish-like propulsive methods for locomotion and active flow control, control of coordinated systems with communication constraints, vision-based sensing for state estimation, and development of integrated human and autonomous multivehicle systems.