



Department of Mathematical Sciences

Seminar in Stochastic Systems

Dr. Ruihua Liu

School of Management
University of Texas at Dallas

*Asymptotically Optimal Controls of Hybrid Linear Quadratic
Regulators in Discrete Time*

Thursday, February 19, 2004
4:00 pm
Pierce 218

Abstract: The topic of this talk is a research result on nearly optimal controls for a class of discrete-time hybrid systems modulated by a singularly perturbed Markov chain. I will first briefly review the singularly perturbed Markov chain and results related to this research. Then I will present our approach and results. We decompose the state space of the underlying Markov chain into a number of recurrent classes and a group of transient states. Using a hierarchical control approach, by aggregating the states in each recurrent class into a single state, a continuous-time quadratic limit control problem with less complexity is derived. Using the optimal controls for the limit problem, a nearly optimal control for the original problem is constructed. The asymptotic optimality of such control is proved. A numerical example is given. Finally, we mention some further researches in this subject.

Dr. Ruihua Liu has a Ph.D. in Applied Mathematics awarded by University of Georgia, USA, and a Ph.D. in Engineering Sciences awarded by Nankai University, China. His research interests are in the area of stochastic optimal control, applied probability, stochastic modeling, mathematical and computational finance, and numerical computing.

Refreshments will be served at 4:00 pm.

For more information contact Prof. Darinka Dentcheva at ddentche@stevens-tech.edu or call 201-216-5449.