



Fall 2008 Seminar Series



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Friday, October 24, 2008

Time: 3:00 PM

Room: JPL 4.03.08

Stochastic Problems in Network Controlled Systems

Abstract: Networked induced delays are usually treated as fixed or constants. But the reality is that delays in the network continue to change and should be treated as time-varying functions. We investigated the time-varying delays as continuous, bounded functions with bounded derivatives in a networked control system. A problem of feedback stabilization of hybrid systems with time-varying delay and Markovian switching is investigated. Sufficient conditions for stability based on linear matrix inequalities (LMI's) for stochastic asymptotic stability is obtained. The stability result depended on the mode of the system and of delay-independent. The robustness results of such stability concept against all admissible uncertainties are also investigated. We would like to make a remark that these results are a little conservative because the sufficient condition is independent of delay. This conservativeness of delay encouraged us to investigate non-conservative sufficient conditions which are dependent on delay. We have succeeded in obtaining such conditions and the comparison of both delay-dependent and delay-independent results will be presented. Examples will be provided to exhibit the obtained results.

A reception will follow the talk and will be held in JPL 4.03.08