ECE Department Lecturer Series
Thursday, Oct. 08, 2009, Dana Research Center 442, 1-2pm

Stability Analysis of Switched Systems using Variational Principles

Prof. Michael Margaliot
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Host: Gilead Tadmor

Abstract:
Switched systems - systems that can switch between several different modes of operation - are ubiquitous in the world around us. Mathematical models that incorporate switching between several subsystems have numerous applications in many disciplines of science.

The stability analysis of switched systems is attracting considerable interest from both the computer science and control engineering communities.

The talk is a self-contained overview of two methods for the stability analysis of switched systems under arbitrary switching; one based on variational principles and the second on Lie-algebraic tools.

Joint work with Daniel Liberzon (University of Illinois at Urbana-Champaign) and Michael S. Branicky (Case Western Reserve University).

Bio:
Michael Margaliot received the BSc (*cum laude*) and MSc degrees in Electrical Engineering from the Technion – Israel Institute of Technology – in 1992 and 1995, respectively, and the PhD degree (*summa cum laude*) from Tel Aviv University in 1999. He was a post-doctoral fellow in the Department of Theoretical Mathematics at the Weizmann Institute of Science. In 2000, he joined the faculty of the School of Electrical Engineering-Systems, Tel Aviv University.

Dr. Margaliot's research interests include the stability analysis of differential inclusions and switched systems, optimal control, fuzzy control, computation with words, and fuzzy modeling of biological phenomena. He is co-author of *New Approaches to Fuzzy Modeling and Control: Design and Analysis*, World Scientific, 2000 and of *Knowledge-Based Neurocomputing*, Springer, 2009.

For questions please contact Prof's Nian Sun (nian@ece.neu.edu) or Mehmet Dokmeci (Dokmeci@ece.neu.edu).