

2008-2009 Graduate Seminar Series

The Department of Mechanical Engineering – Engineering Mechanics

Proudly Presents

Dr. Suhada Jayasuriya National Science Foundation

Suhada Jayasuriya received his PhD from Wayne State University in 1982. He served on the faculty of Michigan State University until 1987 and has been with Texas A&M University since then. Dr. Jayasuriya was elected Fellow of ASME in 1994, received the Gustus L. Larson Memorial Award of ASME in 1997, the Outstanding Investigator



Award in 2002 and the Michael J. Rabins Leadership Award in 2008 from ASME's Dynamic Systems and Control Division. He has held the Kotzebue endowed professorship since 1994. Dr. Jayasuriya served as Head of the Department of Mechanical Engineering at TAMU from 1997-2001, recruiting twelve new faculty members. He has served as General Chair of 2005 American Control Conference, Chairman of ASME's Dynamic Systems and Control Division (2002-2003), and was the Editor-in-chief of the Journal of Dynamic Systems, Measurement, and Control from 2003-2008. Dr. Jayasuriya is currently serving as

Director of the Control Systems Program in the CMMI Division of the National Science Foundation. His research interests have included frequency domain robust control synthesis, vibration and flow control, nano-precision motion control, cooperative control and sensor networks.

Thursday, Apr. 16, 2009 3:00 – 4:00 p.m. Room 112, ME-EM Bldg.

Funding Opportunities at the NSF and Cooperative Control under Hard Constraints and Coupling

In this talk, first I will give an overview of the programs within the CMMI division at the NSF and describe the goals and opportunities within the control systems program.

Second, I will present some recent research on the currently active topic of multi-agent formation control. Considered is a class of distributed control problems that is dominated by task coupling, dynamic constraints and actuator limitations. A geometric formulation of the associated constraints provides a unifying framework for a number of formation control problems including electronic attack, rigid formation keeping, and formation reconfiguration. The proposed framework advocates a shift in paradigm from the traditional TPBVP (Two-point Boundary Value Problem) formulation to a sub-optimal approach that leads to effective, real time control algorithms. In particular, it lends itself to simultaneous on-line, real time, trajectory synthesis and tracking with guarantees of dynamic feasibility, scalability and reduced computational complexity.

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