

# EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

## Control of Dynamic Systems with Multiple Objectives

**ABSTRACT** – The challenges of controlling multiple dynamic systems with multiple objectives include problems in multi-player dynamic games, multi-objective optimization, and decentralized control and estimation. The additional complexities are caused by the existence of nonlinearities, time delays and perturbations in dynamic models, as well as various state, input and communication constraints. In this talk, a number of results related to multi-objective control of multiple dynamic systems will be presented. To illustrate these results some particular examples of controlling multiple dynamical systems in pursuit of accomplishing multiple objectives such as guaranteed capture or evasion, collision avoidance, tracking, and coverage control, will be presented.



**Dr. Dušan M. Stipanović**

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the Department of Industrial and  
Enterprise Systems Engineering

**SPEAKER BIO** – Dr. Dušan Stipanović received his B.S. degree in electrical engineering from the University of Belgrade, Belgrade, Serbia, in 1994, and the M.S.E.E. and Ph.D. degrees (under supervision of Professor Dragoslav Šiljak) in electrical engineering from Santa Clara University, Santa Clara, California, in 1996 and 2000, respectively. Dr. Stipanović had been an Adjunct Lecturer and Research Associate with the Department of Electrical Engineering at Santa Clara University (1998-2001), and a Research Associate in Professor Claire Tomlin's Hybrid Systems Laboratory of the Department of Aeronautics and Astronautics at Stanford University (2001-2004). In 2004 he joined the University of Illinois at Urbana-Champaign where he is now Associate Professor in the Department of Industrial and Enterprise Systems Engineering and Coordinated Science Laboratory. He is a visiting Professor in the School of Electrical Engineering, University of Belgrade, Serbia, and in the Robotics and Telematics Department at the University of Wuerzburg, Germany, and also held a visiting faculty position in the EECS Department at the University of California at Berkeley. His research interests include decentralized control and estimation, stability theory, optimal control, and dynamic games with applications in control of autonomous vehicles, circuits, and medical robotics. Dr. Stipanović served as an Associate Editor on the Editorial Boards of the *IEEE Transactions on Circuits and Systems I and II*. Currently he is an Associate Editor for *Journal of Optimization Theory and Applications*.

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School of Engineering  
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**TUESDAY, FEBRUARY 7, 2017**

**3:30PM – 4:50PM**

USC ANDRUS GERONTOLOGY CENTER (GER), Room 206