



**The Center for Control, Dynamical Systems, and Computation
University of California at Santa Barbara
Winter 2007 Seminar Series
Presents**

Wireless Control Systems: Scientific Challenges and Emerging Applications

Karl Johansson

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Abstract:

The growing number of embedded computer and sensor devices equipped with radio interfaces in industry and society in general poses a wealth of challenging research problems for systems and control. There is a lack of theory supporting design and operation of these networked systems. In this talk, we will argue about the influence of the architecture on the robustness and performance of control and estimation over wireless networks. Questions will be raised on good vs bad network topologies, layered vs flat communication structures, and end-to-end vs intermediate controls. Results will be illustrated on problems from industrial automation, personal communication, and autonomous vehicles.

About the Speaker:

Karl H. Johansson received an M.S. and a Ph.D. in Electrical Engineering in 1992 and 1997, respectively, both from Lund University in Sweden. He held positions as Assistant Professor at Lund University 1997-98 and as Visiting Research Fellow at UC Berkeley 1998-2000. Currently he is Associate Professor at the School of Electrical Engineering, Royal Institute of Technology, and holds also a Senior Researcher Position at the Swedish Research Council since 2006. His research interests are in networked control systems, hybrid and embedded control, nonsmooth feedback, and control applications in automotive, automation and communication systems. He serves on the Executive Committees of the European research projects HYCON and RUNES, both on networked embedded systems. He is Associate Editor of Automatica. Johansson was awarded an Individual Grant for the Advancement of Research Leaders from the Swedish Foundation for Strategic Research in 2005. He received the Young Author Prize from the International Federation of Automatic Control in 1996 and the Peccei Award from the International Institute of System Analysis, Austria, in 1993. He received Young Researcher Awards from Scania in 1996 and from Ericsson in 1998 and 1999.
