



SYSTEMS, CONTROLS, AND ROBOTICS SEMINAR SERIES



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4:00 p.m. / 100 Harrington Education Classroom Center

From Research to Industrial Impact in Advanced Control: A Systems Engineering Perspective and an Automotive Case Study

ABSTRACT

The first part of this talk will present a perspective on the transfer of research results in control to industrial practice. I argue that successful application of control requires awareness of how products and solutions are developed in the targeted industry sector. Three critical areas are highlighted: control development processes, automation system platforms, and work roles. Compatibility challenges in these areas need to be addressed for industry impact, on the basis of criteria that matter to customers. Examples from different application domains are presented to contrast industry-specific requirements. The second part of the talk will discuss a recently productized application in some detail: the OnRamp Design Suite for automotive powertrain control. OnRamp incorporates algorithms and tools for dynamic modeling and identification, control design with explicit model-predictive control, and intuitive controller tuning. Using OnRamp, the clean-sheet development time to achieve transient control is reduced in most cases from several months to a few weeks.

BIO

Tariq Samad is a Corporate Fellow with Honeywell Automation and Control Solutions, based in Minneapolis, U.S.A. His career with Honeywell has spanned 27 years, during which time he has contributed to and led automation and control technology developments for applications in electric power systems, the process industries, building management, automotive engines, unmanned aircraft, and clean energy. His research interests relate broadly to automation, intelligence, and autonomy for complex engineering systems.

Dr. Samad served as the President of IEEE Control Systems Society in 2009 and he is the President Elect for the American Automatic Control Council. He is a Fellow of the IEEE and the recipient of a few awards including the 2008 IEEE CSS Control Systems Technology Award, a Distinguished Member Award from IEEE CSS, and an IEEE Third Millennium Medal. He was editor-in-chief of *IEEE Control Systems Magazine* from 1998 to 2003. He was the General Chair for the 2012 American Control Conference (Montréal), and also chaired/co-chaired several workshops, most recently the International Workshop on Smart City (Hangzhou, China, Sept. 2013). Dr. Samad holds 18 patents and has authored or coauthored over 100 publications. He is a member of the Board of Directors of the Smart Grid Interoperability Panel and chairs the board's Executive Committee. Dr. Samad holds a B.S. degree in Engineering and Applied Science from Yale University and M.S. and Ph.D. degrees in Electrical and Computer Engineering from Carnegie Mellon University.

Refreshments will be served at 3:45 p.m.