IEEE Ottawa Section

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Compensation of Long Input Delays for Unstable Nonlinear and PDE Systems

by

Dr. Miroslav Krstic, Sorenson Distinguished Professor and Director of the Center for Control Systems and Dynamics at UC San Diego

DATE: March 19, 2009.
TIME: Refreshments, Registration and Networking: 06:30 p.m.; Seminar: 07:00 p.m. – 08:00 p.m.
PLACE: Algonquin College, 1385 Woodroffe Ave., School of Advanced Technology, Building-T, Room T119
PARKING: No fee after 5:00 p.m. at the Visitors' Parking Lots 8 & 9. Please respect restricted areas.
ADMISSION: Free. Registration required. To ensure a seat, please register by e-mail contacting:
Wahab Almuhtadi at almuhtadi@ieee.org.
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Abstract

Input delays create challenges in stabilization problems in many applications for unstable plants. I will present new designs for global stabilization of broad classes of nonlinear systems with long input delays. I will also introduce problems where the length of the input delay is highly uncertain, or even completely unknown, and present adaptive control designs for stabilization in the presence of this and other parametric uncertainties. In addition to input delays, I will discuss other infinite-dimensional input dynamics, such as those that combine convective and diffusive phenomena. Finally, I will show designs for PDEs with long input delays, such as unstable reaction-diffusion equations and anti-stable wave equations.

Bio

Miroslav Krstic is a Sorenson Distinguished Professor and Director of the Center for Control Systems and Dynamics at UC San Diego. He is a Fellow of IEEE and IFAC and a co-author of eight books: Nonlinear and Adaptive Control Design (1995), Stabilization of Uncertain Nonlinear Systems (1998), Flow Control by Feedback (2002), Real-Time Optimization by Extremum Seeking Control (2003), Control of Turbulent and Magnetohydrodynamic Channel Flows (2007), Boundary Control of PDEs (2008), Adaptive Control of Parabolic PDEs (2009), and Delay Compensation for Nonlinear and PDE Systems (2009).