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Automatic
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The Department of Automatic Control & Systems Engineering
is pleased to announce the following seminar:

Some optimal control problems for hybrid systems with hysteresis

Dr Fabio Bagagiolo

Professor of Mathematical Analysis

Department of Mathematics

University of Trento, Italy

Wednesday, 3 February 2016 at 14:00

LT01, Sir Henry Stephenson Building

Abstract

The dynamic programming method will be applied to optimal control problems for systems whose the state-variables evolve in a hybrid manner: some of them continuously evolve by an ODE, and some others evolve by hysteresis (a particular memory effect). The aim is to study the corresponding Bellman equation in the framework of the viscosity solution theory for Hamilton-Jacobi equations. Some application examples will be given to inverse optimal control problems, to switching problems and to an "optimal visiting" problem (travelling salesman-like problem).

Biography

Fabio Bagagiolo received the Laurea degree in 1994 and the Ph.D. degree in 1998, both in Mathematics, from the University of Padova and from the University of Trento, respectively. He is currently a tenured assistant Professor at the Department of Mathematics of the University of Trento. He has visited the Institut Henri Poincaré in Paris (France), the Center for Nonlinear Analysis of the Carnegie Mellon University of Pittsburgh (USA), the Department of Mathematics of the University of Leipzig (Germany), the Max-Planck Institute of Leipzig (Germany), the Department of Mathematics of the University of Bordeaux (France), and the Department of Mathematics of the University of Vaxjo (Sweden).

His research interest are mathematical control theory, viscosity solutions for Hamilton-Jacobi equations, differential games, mean field games, hybrid systems, mathematical models of hysteresis and weak solutions of second order partial differential equations. On these topics he has delivered several doctoral courses. He is now supervising one PhD student and one postdoctoral researcher.

He was member of the organizing committees of the international conferences:

S.I.N.G. 6 – Spain, Italy, Netherlands 6th Meeting on Game Theory, Palermo, July 2010; Free Boundary Problems, theory and applications, Trento, September 2001; Viscosity Solutions and Their Applications, Bressanone-Brixen, July 2000. He was also general chair of the international conference: NETGCOOP Network, Games, Control and Optimization, Trento, October 2014.

Actually he is principal investigator of the interdepartmental research project "Optimization techniques for hybrid dynamical systems: from theory to applications" funded by the University of Trento within its Strategic Plan 2014-2016.

He is author and co-author of articles on relevant international mathematical journals and on proceedings of international conferences.