Ph.D. School in
Electrical and Electronics Engineering and Computer Science

SEMINAR

Numerical Optimal Control of Robotics Systems: Experiences in Kazakhstan

Matteo Rubagotti
Professor

Nazarbayev University, Astana, Kazakhstan

20 March 2019, 11 a.m.
Aula seminari Magenta, piano D

Abstract: The seminar will give an overview of the research topics in robotics in which I have been working at Nazarbayev University. First, I will describe the use of offline and real-time convex optimization for controlling spherical parallel manipulators avoiding self-collisions. Then, I will talk about the application of optimal control and model predictive control to variable-stiffness-actuated robots: these constitute a promising framework for the future of human-robot interaction, but presents many challenges, due to the presence of strong nonlinearities, and the need to satisfy state constraints during their motion. The third topic will be the use of model predictive control for the teleoperation of robot manipulators. Videos of experimental results will be shown for each of the three topics.

Bio: Matteo Rubagotti is an associate professor of robotics and mechatronics at Nazarbayev University, Astana, Kazakhstan. Before that, he was a lecturer in control engineering at the University of Leicester, UK (2015-2018), an assistant professor of robotics and mechatronics at Nazarbayev University, (2012-2015) and a postdoc at the University of Trento, Italy, and at IMT Institute for Advanced Studies, Lucca, Italy (2010-2012). He obtained his PhD (2010), MSc (2006) and BSc (2004) in computer engineering at the University of Pavia, Italy.
His main research interests are in optimal control and motion planning, model predictive control, and sliding mode control, and in their application to robotics (in particular, parallel manipulators, variable-impedance actuation, and teleoperation). On these and other topics he has authored or coauthored about 50 technical papers in leading international journals and conferences.

Organizer   **Ph.D. Coordinator**

Prof. Lalo Magni

Prof. Paolo Di Barba

Seminar in English
For more information: lalo.magni@unipv.it