ENGINEERING NEUROSCIENCE & HEALTH

Department of Biomedical Engineering Division of Biokinesiology and Physical Therapy

ENH SEMINAR SERIES

Presents:

Jonas Buchli
ETH Zurich

buchlij@ethz.ch

Monday
April 7, 2014
4:00 pm

L2M2 – Learning Legged Mobile Manipulation

Jonas Buchli, Ph.D.

Associate Professor for Agile and Dexterous Robotics
ETH Zurich

Using robots with arms and legs promises robotic service solutions with unprecedented versatility and flexibility. Ultimately, these robots might prove useful in a wide range of tasks. However, these systems also come with a profound intrinsic complexity. They force us to tackle the challenge of solving some of the hardest planning and control problems in robotics in a principled way. Such problems include optimal control on high dimensional, nonlinear, non-smooth, stochastic systems. Using learning control the community has recently been able to sketch a principled approach to addressing these difficult control problems. However, learning full body motion skills with contact dynamics and unstable dynamics requires us to rethink some of the approaches and push beyond the current state of the art in learning control. For instance contact dynamics challenges many assumptions behind current learning control approaches; the open-loop unstable nature of some tasks render the initialization and the exploration process more critical than typically assumed. In this talk I will show our recent work on learning control for such problems. I will briefly touch on the importance of the underlying control systems and I will show how we can combine model based and model free approaches to learning and control to achieve robustly performing learning controllers running on real robotic systems with challenging dynamics.

Locations: *Seminar is simultaneously presented*

UPC: HNB 100 – LIVE
Hedco Neurosciences Building
UPC Campus
Map/Directions: http://www.usc.edu/about/visit/upc/

HSC: CHP 147 – Video Conference
Center for the Health Professional
HSC Campus
Map/Directions: http://www.usc.edu/about/visit/hsc/

Organized by Professor Francisco Valero-Cuevas http://bbdl.usc.edu/ENH

Web Cast
http://capture.usc.edu/college/Catalog/?cid=af180d48-ceff-42b9-a35c-eb199daed320
Information about all seminars can be found at: http://bbdl.usc.edu/ENH