Robots in Touch with Reality

Jonas Buchli
ETH Zürcich
Institute of Robotics and Intelligent Systems
Tannenstrasse 3, 8092 Zürich

Abstract - Autonomous robots are about to step out of the labs and factory floors. Out there they have to deal with a world that has a lot of uncertainties and is dynamically changing. Allowing robots to make sense and to behave robustly in such a world requires us to combine control theory with machine learning. In my talk, I will show our efforts on getting robots to behave with agility and dexterity in the face such an unstructured world. These robots walk, run, jump and grasp. Common to all these tasks are the very dynamic contact with the environment that is fundamental to achieving the task. I will touch on the foundational control approaches it takes for a robot to robustly interact with the environment. And, I will show the learning algorithms that solve the hard control problems associated with dynamic contact problems.