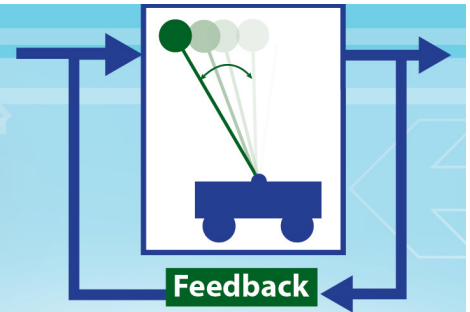


COLLEGE OF ENGINEERING

Control Seminar



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The Surprising Power of Simple Models for Compliant manipulation Under Uncertainty



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3:30 - 4:30 pm • 1500 EECS

ABSTRACT: Manipulation involving compliance in either the robot or object being manipulated is a crucial frontier of current manipulation research. Compliant robots like Baxter offer low-cost human-friendly platforms but exhibit significant actuation uncertainty, making it difficult to perform tasks requiring precision. Compliant objects such as cloth or cables are ubiquitous in domestic and manufacturing applications, yet such objects often exhibit significant model uncertainty, making it difficult to predict how they will deform. This talk will describe our recent work on manipulation in these two domains. I will first describe a new approach to motion planning and execution that allows us to use contact to mitigate the effects of actuation uncertainty for rigid robots. Then I will describe our recent work on a Multi-Armed Bandit framework to select between a set of potential models for manipulation of deformable objects. Surprisingly, both approaches allow us to perform useful tasks despite having poor models of how the robot/object will behave.

BIO: Dmitry Berenson received a BS in Electrical Engineering from Cornell University in 2005 and received his Ph.D. degree from the Robotics Institute at Carnegie Mellon University in 2011, where he was supported by an Intel PhD Fellowship. He completed a post-doc at UC Berkeley in 2012 and was an Assistant Professor at WPI 2012-2016. He started as an Assistant Professor in the EECS Department and Robotics Institute at the University of Michigan in 2016. He received the IEEE RAS Early Career award in 2016.