Optimal Control for Robotic Prosthetics with Interaction Primitives

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Objective

Interactive

Robotics Lab

- shared human-robot contol and therefore cast it as a symbiotic interaction, in which human and robot collaboratively generate healthy, physical, and bi-directional interactions. We combine optimal control pricipals into a Bayesian framework, resulting in a controller which :
- a.) learns to predict human motion,

Inference and Future State Prediction



Bayesian inference using Interaction variables, and control values. Given made about the continuation of the

Generating Optimal Control







1.0

Summary

The availability of information about the current and anticipated state of the musculoskeletal system during realtime execution is a critical and unique property of our approach. In turn, this information is



used by the model predictive control

scheme to optimize robot control values;

choosing assistive actions that ensure

healthy behavior of the user.

Ongoing Work: We are currently working

on human subject tests with transtibial

amputees across a variety of motions.