

NRI: FND: COLLAB: Design of Dynamic Multibehavioral Robots: New tools to consider design tradeoff and enable more capable robotic systems



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Challenge:

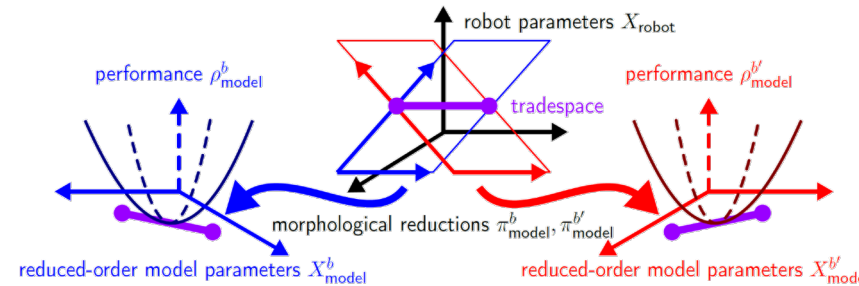
How do we design a robot that is good at multiple behaviors?



Most mobile manipulation systems are built by combining independent manipulation and locomotion system.

Solution

Lift reduced-order model performances to a common design parameter tradespace, then use techniques from Pareto optimization to navigate that tradespace.



This project will study the relationship between design spaces and develop methods for navigating the tradeoffs between behaviors.

Scientific Impact

The analytical and computational techniques we create will contribute toward establishing a systematic paradigm for robot design.

Broader Impact

Design for multibehaviorality will help produce e.g. home assistance robots that must move and interact in human environments.

Integrated into teaching (*CMU Robot Design and experimentation class*) and outreach (*UW Discovery Days*).