

Complexity of Human-Cyber-Physical Interaction

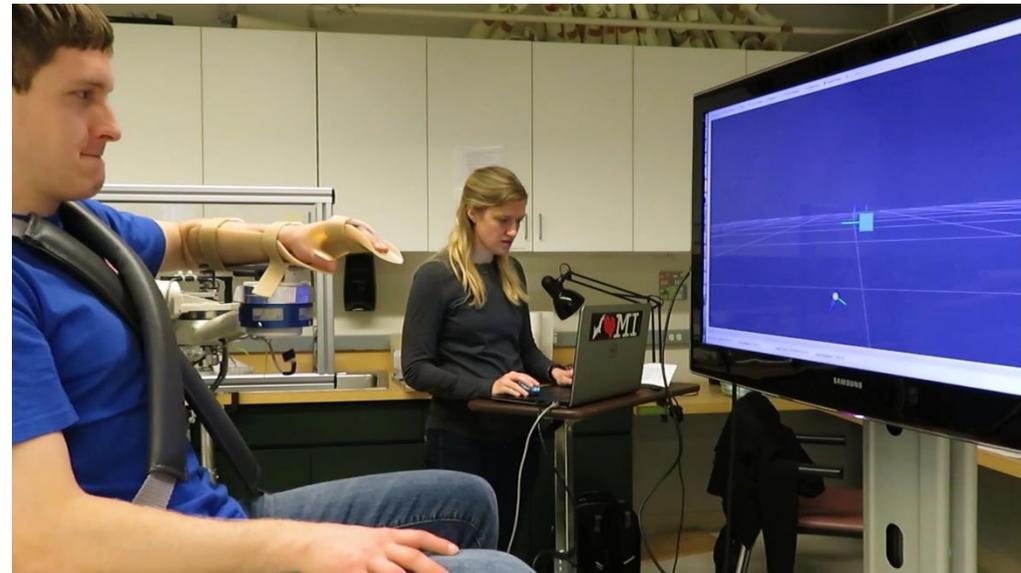
Todd Murphey

Mechanical Engineering

Physical Therapy and Human Movement Sciences

Northwestern University

- Why are human-robot systems *less* complex than independent human systems and robot systems?
- Paper: *P. Trautman, "Breaking the Human-Robot Deadlock: Surpassing Shared Control Performance Limits with Sparse Human-Robot Interaction" Robotics Science and Systems, 2017*
- Main idea: "intention ambiguity" leads to simplicity, not complexity
- Quote: "Whereas interaction almost universally precipitates exponential complexity, interacting GPs decrease joint action space size."



A subject using the NACT3D robot during an inversion/balance task. How complex is this physical interaction?