

ROBOTICS ENGINEERING



RBE Colloquium Series Presents Monroe Kennedy III

Modeling and Control for Robotic Assistants

Abstract: As advances are made in robotic hardware, the capacity of the complexity of tasks they are capable of performing also increases. One goal of modern robotics is to introduce robotic platforms that require very little augmentation of their environments to be effective and robust. Therefore the challenge for the Robotician is to develop algorithms and control strategies that leverage knowledge of the task while retaining the ability to be adaptive, adjusting to perturbations in the environment and task assumptions.

These strategies will be discussed in the context of a wet-lab robotic assistant. Motivated by collaborations with a local pharmaceutical company, we will explore two relevant tasks. First, we will discuss a robot-assisted rapid experiment preparation system for research and development scientists. Second, we will discuss ongoing work for intelligent human-robot cooperative transport with limited communication. These tasks are the beginning of a suite of abilities for an assisting robotic platform that can be transferred to similar applications useful to a diverse set of end-users.

Bio: Monroe D. Kennedy III is a Ph.D. candidate in the Mechanical Engineering and Applied Mechanics department at the University of Pennsylvania and is a member of the Kumar Lab. He received his Bachelor of Science from the University of Maryland Baltimore County in 2012, he then received his Masters in Robotics from the University of Pennsylvania in 2016. He is co-advised in his dissertation by Professors Kostas Daniilidis and Vijay Kumar.

Monroe's research is in robotic manipulation for human-robot collaborative tasks. His latest research thrusts include robotic wet-lab experiment preparation for which the Penn team was a finalist in the KUKA innovation award at the Hannover Messe in April 2018. His latest work also includes human-robot cooperative carrying, where the robot leverages implicit cues from the human leader coupled with context from local obstacles to transport efficiently.

Monroe has mentored three undergraduate students through 'Research Experiences for Undergraduates'. He has been a senior project mentor, and he was an NSF 'Research Experience for Teachers' mentor for two years, mentoring middle school teachers in robotics research. He received the 'Outstanding Teaching Assistant Award in Mechanical Engineering' and has given numerous presentations for community outreach through the GRASP Lab.

Monroe is a recipient of the GEM fellowship and NSF Graduate Fellowship awards. He is a member of both ASME and IEEE. Monroe's latest research can be found at www.monroekennedy3.com.

Tuesday, February 26, 2019
2:00 p.m. - 3:00 p.m.
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