



## Monroe Kennedy III

Assistant Professor of Mechanical Engineering

### Bio

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#### BIO

Monroe Kennedy III is an Assistant Professor of Mechanical Engineering. He received his PhD in Mechanical Engineering and Applied Mechanics, and a Masters in Robotics from the University of Pennsylvania where he was a recipient of both the NSF and GEM graduate research fellowships. His area of expertise is in robotics, specifically the development of theoretical and experimental approaches to perform control and estimation for robotic systems, in particular, robotic manipulation and human-robot collaborative tasks. He applies expertise in dynamical systems analysis, control theory (classical, non-linear and robust control), state estimation and prediction, motion planning, vision for robotic autonomy and machine learning.

#### ACADEMIC APPOINTMENTS

- Assistant Professor, Mechanical Engineering

#### BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, American Society of Mechanical Engineers (2015 - present)
- Member, Institute of Electrical and Electronics Engineers (2016 - present)

#### PROFESSIONAL EDUCATION

- PhD, University of Pennsylvania , Mechanical Engineering and Applied Mechanics (2019)
- MS, University of Pennsylvania , Robotics (2016)
- BS, University of Maryland, Baltimore County , Mechanical Engineering (2012)

#### LINKS

- Assistive Robotics and Manipulation Lab: <https://arm.stanford.edu>

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research is to develop technology that improves everyday life by anticipating and acting on the needs of human counterparts. The research can be divided into the following sub-categories: robotic assistants, connected devices and intelligent wearables. I use a combination of tools in dynamical systems analysis, control theory (classical, non-linear and robust control), state estimation and prediction, motion planning, vision for robotic autonomy and machine learning. My Assistive Robotics and Manipulation lab ([arm.stanford.edu](https://arm.stanford.edu)) focuses heavily on both the analytical and experimental components of assistive technology design. While our application area domain is autonomous assistive technology, our primary focus is robotic assistants (mobile manipulators and humanoids) with the goal of deployment for service tasks that may be highly dynamic and require dexterity, situational awareness, and human-robot collaboration.

## Publications

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### PUBLICATIONS

- **Autonomous Precision Pouring From Unknown Containers** *IEEE ROBOTICS AND AUTOMATION LETTERS*  
Kennedy, M., Schmeckpeper, K., Thakur, D., Jiang, C., Kumar, V., Daniilidis, K.  
2019; 4 (3): 2317–24
- **Modeling And Control For Robotic Assistants: Single And Multi-Robot Manipulation**  
Kennedy, M. D.  
Publicly Accessible Penn Dissertations.  
2019 (3299):
- **Optimal Paths for Polygonal Robots in SE(2)**  
Kennedy, M., Thakur, D., Hsieh, M., Bhattacharya, S., Kumar, V.  
ASME.2018
- **Object Picking Through In-Hand Manipulation Using Passive End-Effectors With Zero Mobility** *IEEE ROBOTICS AND AUTOMATION LETTERS*  
Mucchiani, C., Kennedy, M., Yim, M., Seo, J.  
2018; 3 (2): 1096–1103
- **Precise dispensing of liquids using visual feedback** *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*  
Kennedy, M. D., Queen, K., Thakur, D., Daniilidis, K., Kumar, V.  
2017
- **Precise Dispensing of Liquids Using Visual Feedback**  
Kennedy, M., Queen, K., Thakur, D., Daniilidis, K., Kumar, V., Bicchi, A., Okamura, A.  
IEEE.2017: 1260–66
- **A Triangle Histogram for Object Classification by Tactile Sensing**  
Zhang, M. M., Kennedy, M. D., Hsieh, M., Daniilidis, K., IEEE  
IEEE.2016: 4931–38
- **Decentralized Algorithm for Force Distribution With Applications to Cooperative Transport** *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*  
Kennedy III, M., Guerrero, L., Kumar, V.  
2015
- **Automated biomanipulation of single cells using magnetic microrobots** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*  
Steager, E. B., Sakar, M., Magee, C., Kennedy, M., Cowley, A., Kumar, V.  
2013; 32 (3): 346–59