

Griffon McMahon

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EDUCATION

University of Pennsylvania

Master of Science in Engineering, Robotics

Philadelphia, PA

May 2022

Purdue University

Bachelor of Science in Mechanical Engineering, Minor in Classical Studies

West Lafayette, IN

May 2020

EXPERIENCE

Graduate Research Fellow

ScalAR Lab, University of Pennsylvania

August 2022–Present

Philadelphia, PA

- Examines the effects of inserting a paucity of agents into a swarm with the goal of influencing the behavior of the whole
- Quantifies uncertainty in unpredictable systems with conformal prediction used in the realm of target tracking
- Tracks agents with unknown dynamics in the presence of occlusions and faulty models

Naval Research Enterprise Internship Program (NREIP)

United States Naval Research Laboratory

Summer 2024

Washington, DC

- Analyzed many agents swarming modeled through delay differential equations using mean field analysis
- Employed bifurcation theory to determine the conditions in which a swarm would switch from one behavior to another

Graduate Research Assistant

*Kod*lab, University of Pennsylvania*

January 2021–May 2022

Philadelphia, PA

- Developed gaits for Jerboa, an underactuated and tailed bipedal robot, to take advantage of internal degrees of freedom for improved locomotion
- Analyzed dynamics behind hybrid, non-linear systems—especially legged robotics—using templates and anchors
- Implemented control algorithms in both simulation and hardware using event-based guards and feedback control

Undergraduate Research Assistant

Jain Research Lab, Purdue University

June–December 2018, August 2019–May 2020

West Lafayette, IN

- Maintained and developed code using partially-observable Markov decision processes and Bayesian statistics to implement machine learning
- Authored conference paper applying clustering algorithms to human behavior
- Conducted human subject research to sense trust in automated systems using real-time sensors
- Crafted experiment design for examining human-machine interactions in the case of autonomous vehicles using a driving simulator

Teaching Assistant

MEAM 620: Advanced Robotics, University of Pennsylvania

Fall 2021, Springs 2022, 2024–25

Springs 2022, 2024–25

- Updated legacy codebase post-pandemic for quadcopter control with minimizing learning curve and chance of errors under student use in mind
- Guided students in deploying code on quadrotors (Crazyflie 2.1) for the purposes of control, trajectory planning, and path finding
- Maintained drone hardware throughout crashes stemming from student-made code

MEAM 520: Introduction to Robotics, University of Pennsylvania

Fall 2021

- Assisted students with manipulator control of a Franka Emika Panda Arm in simulation and hardware for a pick and place task

Awards and Honors

H. William Bottomley Research Scholarship

2019

Office of Undergraduate Research Scholarship

2019

Master's Award for Teaching

2022

TECHNICAL SKILLS

Languages: MATLAB, Python, C/C++, Javascript, HTML/CSS

Miscellaneous Software: ROS, Linux Computing, SolidWorks, LabVIEW, Git

PUBLICATIONS

- **G. McMahon**, K. Akash, T. Reid, and N. Jain, “On Modeling Human Trust in Automation: Identifying distinct dynamics through clustering of Markovian models.” *IFAC-PapersOnLine*, 2020
- K. Akash, **G. McMahon**, T. Reid, and N. Jain, “Human Trust-based Feedback Control: Dynamically varying automation transparency to optimize human-machine interactions.” *IEEE Control Systems Magazine*, 2020