

# Matthew Romano

ROBOTICS RESEARCHER · PHD CANDIDATE

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## Education

### University of Michigan (UMich)

PHD IN ROBOTICS

Ann Arbor, MI

September 2022

- Dissertation: Planning, Control, and Estimation for Diverse Multi-UAS Missions

MS IN ROBOTICS

May 2019

### University of Illinois Urbana-Champaign (UIUC)

BS IN ELECTRICAL ENGINEERING WITH A COMPUTER SCIENCE MINOR. GPA: 3.95

Champaign, IL

December 2016

## Work Experience

### University of Michigan (UMich)

RESEARCHER, SOFTWARE ENGINEER, INSTRUCTOR

Ann Arbor, MI

September 2017 - September 2022

- Developed an opensource quadrotor and flight controller that integrates reliable, low-latency motion capture feedback
- Derived and experimentally validated a minimum separation bound to guarantee safety in a formation control method
- Developed a novel haptic guidance interface for multilift slung load transportation with real user experiments
- Explored using a team of UAS for wildfire mapping via computationally efficient planning methods in complex 3D terrain
- Added resiliency to a deformable formation via a fluid flow navigation function around pop-up obstacles and vehicle failures
- Researched an autonomous roofing concept via a nailgun-equipped octocopter
- Co-developed and co-taught ROB 103: Robotic Mechanisms, a new first-year, hands-on robotics course

### National Security Innovation Network (NSIN)

INDEPENDENT CONSULTANT

Ann Arbor, MI

January 2020 - June 2020

- Interviewed DoD personnel and reviewed maintenance workflows to understand maintenance data challenges
- Proposed system to assist DoD maintainers in data collection via audio/video information extraction using CV/NLP

### Sprite Robotics

ROBOTICS FIRMWARE ENGINEER

Champaign, IL

January 2017 - May 2017

- Researched and implemented autonomous navigation strategies for a robotic cat toy platform
- Developed future product ideas including an immersed experience via a 360 degree camera

### Bretl Lab, University of Illinois Urbana-Champaign (UIUC)

UNDERGRADUATE RESEARCH ASSISTANT

Champaign, IL

October 2015 - December 2016

- Compared performance of monocular simultaneous localization and mapping (SLAM) algorithms.
- Improved feature tracking algorithms through integration of inertial measurement unit (IMU) data.

### Northrop Grumman (Electronic Systems)

TEST ENGINEER INTERN

Rolling Meadows, IL

June 2015 - August 2015

- Designed and built sensor testing cable and worked with technician to update procedure
- Troubleshoot and fixed battery charger. Analyzed data to characterize failures. Analyzed test yields.

## Honors & Awards

2019	<b>AFRL Swarm and Search AI Competition</b> , First Place (\$26,000)	Dayton, OH
2019	<b>Into the Dataverse Hackathon</b> , First Place (\$15,000)	Ann Arbor, MI
2019	<b>Engineering Research Symposium Scientific Visualization Award</b> , First Place	Ann Arbor, MI
2016	<b>Lextech Senior Design Most Marketable Project Award</b> , Recipient	Champaign, IL

## Additional Skills

**Languages** English (Native), Thai (Elementary Proficiency)

**Computer** C/C++, Python, MATLAB, Make, Bash, LaTeX, ROS, PCB Design (EAGLE, DipTrace)

**Other** Proficient in Excel, PowerPoint, and Word. Working knowledge of Windows, MacOS, and Linux based systems.