Kathleen Xu

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Education

Massachusetts Institute of Technology　　　　　　　　　　　　　　　**Sep. 2021 – Present**
S.M. in Aeronautics and Astronautics (Expected graduation: May 2023)　　　　　*Cambridge, MA*

University of Illinois at Urbana-Champaign　　　　　　　　　　　　　**Sep. 2017 - May 2021**
B.S. in Aerospace Engineering (Graduated with highest honor)　　　　　　　　*Champaign, IL*

Publications: 3 top peer-reviewed journal papers (1 under review) and 2 conference papers (1 under review)

Experience

Reliable Autonomous Systems Lab (REALM), MIT　　　　　　　　　　**Sep. 2021 – Present**
Researcher, Advisor: Dr. Chuchu Fan　　　　　　　　　　　　　　　　*Cambridge, MA*
- Researching safe multi-agent planning for autonomous systems performing cooperative tasks in dynamic environments.
- Developed learning-based fault-tolerant control algorithms for cyber-physical systems via control barrier functions.

Learning, Decision, Control, Autonomy Group, UIUC　　　　　　　　**Sep. 2019 – Mar. 2021**
Research Assistant, Dr. Melkior Ornik　　　　　　　　　　　　　　　　*Champaign, IL*
- Developed efficient methods for characterizing control system's loss of performance under attack.
- Proposed computationally feasible solutions to the NP-complete problem of p-dispersion in free-form polygons.

Putnam Research Group, UIUC　　　　　　　　　　　　　　　　　**Sep. 2019 – Jan. 2021**
Research Assistant, Dr. Zachary Putnam　　　　　　　　　　　　　　　*Champaign, IL*
- Assisted in development of the SLiC tool for simplifying the design, verification, and analysis of aerospace vehicles.

Space Systems Design Lab, UIUC　　　　　　　　　　　　　　　　**Jan. 2019 – May 2019**
Research Assistant, Dr. Koki Ho　　　　　　　　　　　　　　　　　　*Champaign, IL*
- Implemented UKF and EKF in an adaptive control scheme to test spacecraft's trajectory around a splitting asteroid.

Leadership

REALM Undergraduate Research Opportunities Program, MIT　　　　**May 2022 – Present**
Mentor　　　　　　　　　　　　　　　　　　　　　　　　　　　*Cambridge, MA*
- Developing plans, organizing individual tasks, and managing cross-lab projects for the program.
- Providing support and guidance for undergraduate students to perform drone operations in a lab environment.

Illinois Robotics in Space, UIUC　　　　　　　　　　　　　　　　**Sep. 2019 – Jan. 2020**
Mechanical Lead　　　　　　　　　　　　　　　　　　　　　　　　*Champaign, IL*
- Led 6 members in build sessions and ran weekly meetings to track progress on constructing the robot.

Student Aircraft Builders, UIUC　　　　　　　　　　　　　　　　　**Sep. 2017 – May 2018**
Build Team Mentor　　　　　　　　　　　　　　　　　　　　　　　*Champaign, IL*
- Led bi-weekly hands-on workshops and tutoring sessions on constructing a real-size aluminum sheet metal aircraft.

Teaching

Mechanics of Aerospace Structures (AE 321), Course Assistant, UIUC　　　　　　　**Fall 2019**
Statics (TAM 211), Course Assistant, UIUC　　　　　　　　　　　　　　　**Spring 2019**

Honors & Awards

Yao T. Li Fellowship　　　　　　　　　　　　　　　　　　　　　　　　2021, 2022
Dallas Illini Club Scholarship　　　　　　　　　　　　　　　　　　　　　　　2020
Lee H. Sentman Memorial Scholarship　　　　　　　　　　　　　　　　　　　　2019
Richard R. Sladek Scholarship　　　　　　　　　　　　　　　　　　　　2017, 2018

Technical Skills & Interests

Programming: Python, C, C++, MATLAB, HTML, Arduino
Tools: PyTorch, Simulink, Mathmatica, Siemens NX, ANSYS Workbench, OpenRocket, ROS, Git, Linux, LaTeX
Languages: English, Mandarin
Interests: Video Games (Dark Souls, Sekiro), Soccer (Juventus Fan), Basketball (Bucks Fan)