

# JULIA SCHATZ

## Contact

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🌐 juliaschatz

M.S. student with applied experience in software development, nonlinear control theory, and spacecraft guidance, navigation, and control. Experience leading and working in collaborative team environments.

## Skills

### CONTROL SYSTEMS

Motion and Trajectory Planning

MIMO Linear Control

Spacecraft Control

Nonlinear Control

Passive Systems Theory

Practical Considerations

### SOFTWARE DEVELOPMENT

C & C++

Python

Matlab

Embedded Software

### MECHANICAL DESIGN

Solidworks

Onshape

### ELECTRONICS

EAGLE

Altium

STM32

KiCAD

## Education

University of Southern California

M.S. Aerospace Engineering (Guidance and Control Focus) 2023

University of Minnesota

BS Electrical Engineering 2021

Minor Computer Science 2021

GPA 3.63 - Magna Cum Laude

## Publications

Schatz, J., & Caverly, R. J. (2021, August). Passivity-Based Adaptive Control of a 5-DOF Tower Crane

2021 IEEE Conference on Control Technology and Applications (CCTA). IEEE.

Shen, P. Y., Schatz, J., & Caverly, R. J. (2021). Passivity-based adaptive trajectory control of an underactuated 3-DOF overhead crane  
Control Engineering Practice, 112, 104834

## Employment

USC Space Engineering Research Center

Los Angeles, CA

Graduate Student Engineer

Aug. 2021 to Current

Performed cubesat integration, developed flight software, validated and integrated satellite GNC systems.

SpaceX

Redmond, WA

Vehicle Bus Software Intern

May 2021 to Aug. 2021

Developed embedded vehicle software for a fleet of satellites. Managed creation of hardware test interface for continuous integration. Investigated control issues leading to periodic motor stalls on field hardware.

University of Minnesota OIT

User Support

Aug. 2018 to Oct. 2020

Open Access Technology International

Software Development Intern

June 2016 to Aug. 2016

Worked with a team of OATI employees to assist with device and software testing.

Created inventory and issue tracking workflows. Conducted internal user experience surveys to improve documentation.

## Projects

### Tower Crane Control Research

Aug. 2020 to May 2021

- Developed dynamic model and robust control law for underactuated nonlinear system.
- Use of passivity theorem to prove theoretical stability.
- Simulation in MATLAB, verification on lab hardware using Simulink.

### NASA Robotic Mining Competition

Sept. 2019 to May 2021

- Worked with a small team to develop autonomous robot for simulated lunar mining mission.
- Used ROS to integrate sensor nodes for EKF SLAM implementation.
- Tested in simulation with Gazebo.
- Developed safety critical firm real-time control system using STM32.

### CAD Automation Scripts

Aug. 2019 to Current

- Created custom features for Onshape CAD used by hundreds of high school robotics teams.
- Used computational geometry to automate complex parts.