

# JULIA SCHATZ

GNC ENGINEER

## Contact

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GNC engineer with experience in embedded software development, nonlinear control theory, and spacecraft guidance, navigation, and control.

## Skills

### CONTROL SYSTEMS

Motion and Trajectory Planning

MIMO Linear Control

Spacecraft Control

Nonlinear Control

Passive Systems Theory

### 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) 2022

GPA 3.82

University of Minnesota

BS Electrical Engineering 2021

Minor Computer Science 2021

GPA 3.63 - Magna Cum Laude

## Employment

SpaceX

GNC Engineer - Falcon Launch Vehicles

Los Angeles, CA  
Jan. 2023 to Current

SpaceX

Associate Engineer - Falcon GNC

Los Angeles, CA  
May 2022 to Aug. 2022

Worked on guidance, navigation, and control software for Falcon launch vehicles.

Increased pace of mission development by automating trajectory optimization. Improved launch availability in high-shear wind conditions. Increased vehicle recovery consistency by analyzing touchdown conditions.

USC Space Engineering Research Center

Research Engineer

Los Angeles, CA  
Aug. 2021 to Dec. 2022

Performed cubesat integration, developed flight software, validated and integrated satellite GNC software. Wrote satellite radio communication software using GNURadio.

Developed real-time control system hardware and software for a scale lunar lander.

Designed electronics system and GNC algorithms for ISS-flight prototype docking mechanism.

SpaceX

Vehicle Bus Software Intern

Redmond, WA  
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.

## 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

## 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.