JULIA SCHATZ

Contact

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⌂ juliaschatz

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 3.62

University of Minnesota
BS Electrical Engineering 2021
Minor Computer Science 2021
GPA 3.63 - Magna Cum Laude

Employment

SpaceX   Los Angeles, CA
Associate Engineer   May 2022 to Aug. 2022
Worked on guidance, navigation, and control software for Falcon launch vehicles. Improved efficiency of mission development. Improved launch availability in high-shear wind conditions. Increased vehicle recovery consistency by analyzing touchdown conditions.

USC Space Engineering Research Center   Los Angeles, CA
Research Engineer   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 for ISS-flight prototype docking mechanism.

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.

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.