Galen Savidge

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EDUCATION

University of Colorado Boulder   **Boulder, CO**
Master of Science | Aerospace Engineering Sciences   Aug 2021 - Dec 2023
GPA: 3.94/4.00

University of California, Santa Cruz   **Santa Cruz, CA**
Bachelor of Science | Robotics Engineering   Sept 2014 - June 2019
GPA: 3.80/4.00 – Highest Honors in the Major

EXPERIENCE

Astranis Space Technologies   **San Francisco, CA**
Associate GNC Engineer   Apr 2021 - Dec 2021, May 2022 - Aug 2022

- Owned the development of geostationary station-keeping and orbit relocation algorithms.
- Built and tested Python ground software GNC algorithm implementations for use in flight.
- Wrote operations procedures for actuator characterization, testing using a hardware-in-the-loop test bed.
- Wrote custom high-fidelity 6-DOF dynamic simulations in Python.
- Designed, built, ran, and post-processed regression tests and Monte Carlo simulations.

PROJECTS

Three-Body Orbit Transfer Design & Simulation   November 2022
Developed a custom dynamical simulation of the Earth-Moon system based on the circular restricted three-body problem (CR3BP). Calculated stable and unstable manifolds of periodic orbits in the vicinity of Lagrange points 1 and 2 and used them to generate guesses for low delta-V transfers. Corrected transfer guesses using a custom multiple shooting algorithm.

Low Thrust Trajectory Optimization   May 2022
Analyzed a high-revolution low-thrust GTO to GEO transfer problem using the modified equinoctial orbital element set. Developed an analytic optimal control law using D. F. Lauden's "primer vector" theory. Wrote smoothing and continuation algorithms to solve for optimal trajectories via indirect shooting and homotopy techniques.

Mars Orbiter Cubesat Attitude Dynamics & Control Simulation   Apr 2022
Derived orbital and attitude dynamics equations and used them to create a Matlab mission simulation. Wrote and tested a globally asymptotically stabilizing control law based on the Modified Rodrigues Parameter set. Implemented guidance laws for Sun pointing, nadir pointing, and communication pointing.

SlugSat Attitude Control System Team Lead   Oct 2018 – June 2019
Led a team of 4 electrical and robotics engineers working on a CubeSat attitude control system. Chose and prototyped space-grade sensors and actuators, wrote embedded C programs for sensor fusion and feedback control, and ran hardware-in-the-loop simulations. Presented team work summaries, ran meetings, and managed team deadlines.

SKILLS

Engineering Tools Numerical Optimization, Spacecraft Dynamics Modelling, Hardware-in-the-Loop Testing
Programming Languages Python, Julia, Matlab, C
Software Tools GMAT, STK, Git, Linux, Atlassian Suite