Joshua K. Geiser

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Professional Experience

NASA, Johnson Space Center (JSC) **Jan 2018 – Present**

Full Time – Flight Mechanics and Trajectory Design Branch *Jul 2022 – Present*

- Developed automation logic for the numerical optimization of 10,000+ abort trajectories, representing scans as parallelizable directed acyclic graphs (DAGs) of individual trajectories
- Characterized Artemis II/III+ abort capability across a variety of different flight regimes and failure modes, disseminating results to management across various departments/programs
- Established development workflow and Git best practices for off-nominal trajectory development team
- Supported real-time flight operations for the Artemis I mission in Mission Control Center (MCC)
- Applied machine learning principles to develop functions of discrete dataset for optimization algorithm
- Spearheaded software integration effort of Copernicus trajectory design software with LinCov analysis tool, supporting robust trajectory optimization of dispersed mission profiles
- Led refactor effort of the Auto-Burn-Plan tool to generate GN&C data products from input reference trajectories
- Analyzed feasibility of aerocapture as an enabling capability for a flagship science mission to Uranus

Pathways Intern *Feb 2019 – Jun 2022*

- Trained in flight controller operational skills including communication, prioritization, and decision-making
- Assessed Artemis I off-nominal trajectory coverage through Python-based scripting and data analysis

USRA Intern *Jan 2018 – May 2018*

- Performed IV&V of SpaceX Crew Dragon's ascent abort capabilities through C/C++ simulation development

Blue Origin **May 2020 – Sep 2020**

Guidance, Navigation, & Control (GN&C) Intern

- Developed MATLAB/Simulink testing infrastructure to support GN&C Processor-in-the-Loop (PIL) testing

NASA, Jet Propulsion Laboratory (JPL) **Jun 2018 – Aug 2018**

Software/Systems Engineering Intern

- Supported requirements management, V&V planning, and web development for the Psyche asteroid mission

Raytheon Company **May 2017 – Aug 2017**

Software/Systems Engineering Intern

- Improved JavaScript/HTML/CSS software to track integration and testing of manufactured assemblies

Education

Stanford University **Sep 2020 – Mar 2022**

M.S. in Aeronautics and Astronautics *GPA: 4.00/4.00*

- Research on spacecraft formation flying; teaching assistant for undergraduate, graduate, and GSB courses

Purdue University **Aug 2015 – Dec 2019**

B.S. in Aeronautical & Astronautical Engineering (With Highest Distinction) *GPA: 4.00/4.00*

- Treasurer of Purdue Engineering Student Council (PESC), managing a six-figure council budget

Technical Skills

Programming Languages: Bash, C, C++, Java, JavaScript, Julia, MATLAB, Python
Operating Systems: Windows, MacOS, Linux
Software: Conda, Copernicus, Git, GitHub, GitLab, LaTeX, Microsoft Office, Visual Studio Code

Outside Experience

RMI Expeditions **Apr 2022 – Present**

Mountain Guide

- Guide for technical mountaineering expeditions on Mt Rainier, Denali, and other high-altitude peaks
- Nationally certified Emergency Medical Technician (EMT) and Wilderness First Responder (WFR)