

Matthew Hirschberger

An aerospace engineer with experience in simulation development, data analysis, and design engineering. Eager for new software engineering challenges.

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EXPERIENCE

a.i. solutions

July 2024-Present • Remote

Space Products Software Engineer

Backend developer on the FreeFlyer team. I coordinate with my team members to design and implement new features in response to mission requirements or customer requests.

- Pushed 10 tickets for new improvements or features to date
- Lead product planning meetings to design new features and discuss improvements
- Drafted and pitched 1 aiLabs proposal for company-wide innovation

September 2023-July 2024 • Lanham, MD

Spacecraft Flight Dynamics & Navigation Engineer

Researched and developed navigation readiness for NASA's ARTEMIS program through the Flight Dynamics Support Services III (FDSS-III) contract.

- Developed custom attitude state estimation filter in Python
- Analyzed over 20 ARTEMIS program lunar EVA scenarios with different sensor packages and orientations
- Team was nominated by our customer for an FDSS-III award in customer service

NASA Marshall Space Flight Center

June-August 2022 • Huntsville, AL

Dusty Plasma Laboratory Intern

Designed and fabricated an injector for secondary electron emission experiments (SEE) on lunar dust samples to inform charging mitigation strategies for the ARTEMIS spacesuits and lander.

- Made engineering sketches and prototypes for 2 injectors
- Assembled, maintained, and operated a high vacuum chamber (10^{-5} torr) containing >500V components
- Calibrated cameras and class IIIA lasers to image JSC-1A grains of <1mm diameter
- Successfully used final injector design to trap charged dust grains in electrodynamic balance for over 2 minutes
- Filed NASA New Technology Report for final design
- Dusty Plasma Laboratory has since gotten approval to use Apollo dust samples with the injector

Stanford GPS Laboratory

June 2020-February 2021 • Stanford, CA

Undergraduate Researcher

Analyzed data from FAA test aircraft to determine if the Wide Area Augmentation System (WAAS) met FAA Minimum Operational Performance Standards (MOPS) for in-flight message loss rate.

- Developed a custom MATLAB script to compare the recorded in-flight SBAS messages to the expected messages published in the CNES database
- Showed through statistical analysis that the WAAS meets the MOPS requirement
- Published results and presented a conference paper for ION 2021

EDUCATION

Stanford University

2017-2022 • Stanford, CA

B.S. Aeronautics & Astronautics,
2017-2021

M.S. Aeronautics & Astronautics,
2021-2022

- Men's Swimming & Diving Team

PUBLICATIONS

'Reevaluating the Message Loss Rate of the Wide Area Augmentation System (WAAS) in Flight', ION, 2021

'Dry Dust Injector', NASA NTR, 2022

SKILLS

- Engineering & physics simulations
- Data analysis
- Software development
- C++
- Python
- MATLAB/Simulink
- Fortran
- FreeFlyer
- Linux