Alexander Reich

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EDUCATION

University of Colorado, Boulder Expected Graduation: May 2027

Bachelor of Science in Aerospace Engineering, Minor in Electrical Engineering

- **GPA: 3.973/4.0**, Dean's List Fall 2023, Spring 2024
- Relevant coursework: Experimental Computational Methods in Aerospace, Intro to Circuits and Electronics, Materials Science for Aerospace Engineering, Aerospace Sciences Lab

EXPERIENCE

MAXWELL Cubesat – *Attitude Determination and Control Systems (ADCS) Engineer* Sep 2024 - Present

Nanosatellite graduate research project to characterize in-orbit chip-scale atomic clock behavior and conduct UHF antenna test

- Debugging momentum control and pointing mode flight code and control systems in embedded C
- Testing reaction wheel and torque rod hardware, ensuring control authority through operation

CU Sounding Rocket Laboratory

Avionics Team Lead Jun 2024 - Present

- Upgrading custom adapter board to include new capabilities such as RF downlink and recovery
- Revamping software structure to support Zephyr RTOS, increasing timing and filter calculation accuracy
- Leading workshops in the basics of embedded software and hardware to onboard new members

Avionics Engineer Aug 2023 - Jun 2024

- Wrote custom sensor driver for the DPS310 barometric altitude sensor using FPrime framework and C++
- Employed low-level communication protocols to interface between microcontroller and sensors

NASA SUITS – *Team Co-Lead* Dec 2023 - Jun 2024

- Co-led a team of 12 in designing an augmented reality display and mission control console for astronaut EVAs
- Selected as one of 11 teams nationally to test our solution at Johnson Space Center Rock Yard
- Developed Human-In-The-Loop testing procedures, providing critical feedback during the design process and providing an assessment of cognitive load on the astronaut
- Ran mission simulation scenarios, presented to a NASA panel, and authored a white paper detailing results
- **Awarded $4,000 research grant** from the California Space Grant Consortium

PROJECTS

5th Kibo Robot Programming Challenge – *Software Engineer* Jun 2024

- Implemented system to navigate a robot through a simulated ISS module autonomously, while avoiding Keep-Out-Zones (KOZs) and using computer vision to scan various items using Java
- Created algorithm to automatically find a near-optimal path to a desired point, while avoiding KOZs
- Team was awarded **Top 10 Nationally** out of 42 teams

NASA Space Apps Hackathon – *Software Engineer* Oct 2023

- Analyzed space weather using DSCOVR solar probe data and devised prediction algorithm, providing advance warning to impacted industries
- Created a Kalman filter to remove anomalous data and enable short term space weather forecasting
- Team was awarded **Local Event Winner** and **Global Award Nominee**

SKILLS

Programming languages and tools: C, C++, MATLAB, Unix, bash, Git

Software Packages: OnShape, LTSpice, FPrime, OpenRocket

Embedded systems: Arduino, BeagleBone Black, ESP32, STM32, I^2C, Zephyr RTOS, PlatformIO

Other: Soldering, Control System Architecture