Alexander Reich

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EDUCATION

University of Colorado, Boulder - Class of 2027
Bachelor of Science in Aerospace Engineering, Minor in Electrical Engineering

- GPA: 3.973/4.0, Dean's List Fall 2023
- Current and previous coursework includes Materials Science for Aerospace Engineering, Experimental Computational Methods in Aerospace, Intro to Statics and Structures, Intro to Aerodynamics and Thermodynamics, and Intro to Circuit Design

EXPERIENCE

Avionics Team Lead – *CU Sounding Rocket Lab (SRL)* Jun 2024 - Present

Our project is to build an avionics system to support our Spaceshot rocket. My responsibilities include:

- Designing and implementing downlink architecture, allowing ground station to access data in real time
- Updating custom circuit board to meet recovery demands
- Developing an experimental flight computer intended for live Kalman filtering and thrust vector control
- Delegating tasks to team members in order to develop full sensor suite and GPS capability
- Leading workshops in the basics of FPrime, bash scripts, etc. to onboard new members efficiently

Team Co-Lead – *NASA Spacesuit User Interface Technologies for Students* Dec 2023 - Jun 2024

- Co-led a team of 12 in designing an augmented reality display and mission control console for astronaut EVAs
- Prioritized and scheduled software development tasks to meet mission requirements
- Developed Human-In-The-Loop testing procedures, providing critical feedback during the design process and providing an assessment of cognitive load on the astronaut
- Successfully tested our design at the Johnson Space Center Rock Yard

PROJECTS

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

- Team was awarded **Top 10 Nationally** out of 42 teams
- Developed and implemented system to navigate a robot through a simulated ISS module, 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

NASA Space Apps Hackathon – *Software Engineer* Oct 2023

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

SKILLS

Programming languages: C, C++, MATLAB, Unix, bash
Software Packages: OnShape, LTSpice, FPrime, OpenRocket
Embedded systems: Arduino, BeagleBone Black
Tools: Git, Soldering

RESEARCH PAPERS

Arya, A., Reich, A., Rawal, I., Bouyer, J., Srihari, H., Raza, A. and Palko, J., POLARIS: AN ASSISTANCE SYSTEM FOR EXTRAVEHICULAR ACTIVITIES. Available on ResearchGate: https://www.researchgate.net/publication/381772663_Polaris_An_Assistance_System_for_Extravehicular_Activities