Alan Hsu

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Sophomore at Purdue University with experience in engineering and programming, passionate about making humans multiplanetary, with a focus on low cost radiation hardened design, and power and RF electronics.

Education

Purdue University, School of Electrical and Computer Engineering, West Lafayette, IN *Dec 2027 | 4.0 GPA*

- Bachelor's of Science in Electrical Engineering

Thomas Jefferson High School for Science and Technology, Alexandria, VA *June 2023 | 4.450 / 4 GPA*

- National Merit Scholarship Recipient
- *Advanced Courses*: Multivariable Calculus, Linear Algebra, Differential Equations, Complex Analysis, Artificial Intelligence, Machine Learning, Robotics, Prototyping, Electronics, Combined Engineering Research Lab

Work Experience

Starpath Robotics | Web: starpath.space

Junior Avionics Engineer (Co-op position) | Hawthorne, CA *May 2024 – Present*

- Developing low cost high performance and high reliability avionics for semi-autonomous lunar mining rovers
- Prototyped and iterated power systems including battery management and precharge with radiation tolerance
- Spearheaded communications subsystem design to facilitate networking between a fleet of lunar mining rovers; validated design with link budget calculation and kicked off design of in house Software Defined Radio solution
- Prototyped RF direction of arrival based localization hardware for rover using coherent multi channel receivers
- Executed on all electronics integration for Rover 9, winning 2nd place in the NASA BTIL Competition
- Supported projects running ROS2 in Ubuntu and by implementing firmware in embedded C

Electrical Engineering Intern | San Francisco, CA *June – Aug. 2022 | June – Aug. 2023*

- Designed and manufactured avionics PCBs for lunar mining rovers to compete in NASA BTIL(Rovers 3, 4, 8)

Extracurriculars

Purdue FLaC-Sat VIP | *FEMTA-Sat Team* *Jan. 2024 – May 2024*

- Took ownership of testing, debugging, and iterating on control circuitry for FEMTA payload thrusters
- Developed microcontroller based control system for thrust control and thermal management of ultra pure water propellant

Purdue Solar Racing | *Solar Subteam* *Aug. 2023 – May 2024*

- Prototyped a low cost high-voltage Maximum Power Point Tracking boost converter for Lux, PSR's submission to the ASC 2024 competition
- Assisted with in-house encapsulation of solar arrays at the Composite Manufacturing and Simulation Center

TJ UAV Club | *Team Captain & Electronics Lead* *Sept. 2021 – June 2023*

- Oversaw the overall project development of Avalon X, a fixed wing aircraft that competed in the 2023 SUAS competition; led flight line operations, safety, and logistics at competition
- Designed and built two iterations of the aircraft's electronics bay, which achieves autonomous flight with a Pixhawk 2.4.8 and image processing with a Raspberry Pi 4
- Designed, fabricated, and twice-iterated a self-stabilizing camera gimbal, tuned camera settings, and developed code for automated image capture and retrieval using gphoto2

TJ Space Program | *TJREVERB Technical Lead* *Sept. 2021 – June 2023*

- Served as a technical lead for TJREVERB, a 2U CubeSat deployed on December 29, 2022 to determine the feasibility of Iridium Short Burst Data (SBD) as a telemetry radio for CubeSats
- Led technical development of electrical hardware and low level programming, including hardware drivers for the electrical power system and radios and a custom flight computer PCB design
- Assisted in final assembly, vibration testing, and oversaw final integration into the Nanoracks deployer
- Designed, built, and iterated a Raspberry Pi and Iridium-based CubeSat bus to provide a low cost and easy to use platform for future missions; coached underclassmen in mission and hardware design

Skills

- Fusion 360 (CAD, CAM), Solidworks (CAD), KiCAD, LTSpice, Ubuntu, Excel
- 3D Printing, Laser Cutting, PCB Assembly, Cable Harnessing, Oscillosccope/VNA analysis/debugging
- Radiation Hazard Assessment, Link and Power Budgeting, Vacuum PartsSelection
- Programming Languages: Python, C/C++, Java, Bash