Adam Aufderheide

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EDUCATION

Bachelor of Science in Aeronautical and Astronautical Engineering **Aug. 2023 - Dec. 2026**
Purdue University, West Lafayette, IN GPA: 3.50/4.00

TECHNICAL EXPERIENCE

Undergraduate Research Assistant **Nov. 2023 - Present**
Purdue Department of Aeronautics and Astronautics
- Synthesized LROC image data in Blender to design a high-fidelity 3D model of the moon.
-Created an automated pipeline for testing visual navigation algorithms using MATLAB, Python, and Blender for image rendering.
- Simulated spacecraft landings to test vSLAM's viability in instantaneously mapping extraterrestrial terrain.
- Utilized vSLAM technology by applying Python algorithms to localize the camera's position and map landmark locations.
- Wrote partial state Gaussian mixture fusion algorithms for distributed navigation and tracking in Python.

Automation Engineering Intern **May 2025 - Aug. 2025**
Komatsu Mining
-Carried out the mechanical and electrical prototyping, design, fabrication, and testing of a modular sensor platform for a software-defined autonomous vehicle, integrating radar, lidar, GPS, and camera systems.
-Engineered custom sensor mounts using bent steel and 3D printing to optimize field of view, thermal performance, and modularity.
-Designed and implemented a custom PCB to interface a motor controller, an RC receiver, a CAN network, and motor encoders.
-Developed and implemented the electrical system architecture, including power distribution, safety systems, and compute integration (Intel NUC, Nvidia Jetson), supporting a 680W load.
-Collaborated cross-functionally to validate hardware and ensure seamless integration with perception and autonomy stacks, delivering a fully functional testbed.

Design Engineer **Aug. 2023 - Present**
Purdue Space Program (Students for the Exploration and Development of Space)
- Worked on the liquid rocketry team to develop motor and fin support structures and the injector for a propulsion system.
- Used Finite Element Analysis to simulate stress/strain and create efficient pocketing patterns and weight distribution in CAD models of rocket parts.

Team Captain and Mechanical Design Lead **Aug. 2019 - May 2023**
FIRST Robotics Team 8680
- Designed, modeled, and constructed prototypes, 3D models, and final iterations of numerous complex mechanical systems to create functioning autonomous and driver-controlled robots, incorporating deadwheel odometry, various sensors, motors, and servos to allow the robot to complete complex tasks with high precision in under three minutes.
- Placed third robot alliance at the 2023 World Championship, ranked seventh team in the all-time hall of fame, winning dozens of competitions and awards.
- Managed 15 team members for multiple years and mentored 52 other students, building leadership skills.
- Secured roughly 100k in capital through corporate sponsorships/investors and built lasting relations with hundreds of businesses, teams, and individuals globally.

RELEVANT COURSEWORK

Modern Vehicle Avionics, Control System Analysis, Air-Breathing Propulsion, Spacecraft Attitude Dynamics, Aerodynamics, Thermal Sciences, Structural Analysis, Dynamics and Vibrations, Introduction to Aerospace Design, Aeromechanics I/II, National Security and Defense, Signal Analysis, Thermodynamics, Fluid Mechanics, C Programming.

SKILLS

- Proficient in CAD modeling software, including Solidworks, NX, Autodesk Inventor, and Autodesk Fusion 360.
- Experience in programming languages, including MATLAB, Python, and C. Experienced with Git workflows.
- Able to operate 3D printing, CNC, and laser cutting machines efficiently.
- Expertise in technical writing standards, MS Office, PLM and PDM software.
- Problem solving, root-cause analysis, failure analysis, and design iteration.