Cassiopeia May Wildgrube

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Education

Tuft University, BS in Mechanical Engineering and Physics (Double Major)   Sept 2021 – May 2025
- Magna cum laude
- **Coursework:** Transport Phenomena, Engineering Design, Control Systems, Classical Mechanics, Modern Physics

Projects

Hybrid Rocket Engine, Founder   May 2024 - June 2025
- Lead 1-year-long development program of hybrid rocket engine using paraffin wax and N_2O
- Modeled combustion in COMSOL, simulating flow, temperature, and species transport to optimize mixing
- Fabricated combustion chambers and pressure vessels based on FEA and first-principles analysis

Flight Computers for IREC Competition   October 2023 - June 2025
- Engineered PCB for flight computer using KiCad, integrating 5 sensors including IMU and barometer.
- Upgraded to ESP32-C3 and LORA telemetry to enable data transmission to ground station over 2 km
- Debugged embedded firmware in C++ for data collection and wireless communication in 4+ PCB designs

Experience

Engineering Intern, Sublime Systmems – Somerville, MA   May 2024 – June 2025
- Supported pilot plant commissioning for low-carbon cement production, aiding in lowering costs by 25%
- Build out piping/valve manifolds based on P&IDs; improved modularity and process reliability
- Implemented advanced process control strategies, enabling 30% efficiency improvement for kiloton scale.

Research Assistant, Tufts Transport Phenomena Lab – Medford, MA   Jan 2024 – May 2024
- Designed experiments quantifying aerogel permeability using supercritical CO_2, can increase output by 1.5x
- Analyzed transport behavior via custom MATLAB scripts and numerical post-processing
- Machined experimental hardware using lathe and mill; improved throughput of data collection 30%

Teaching Fellow, Tufts University CEEO [Center for Engineering Education and   July 2023 – Aug 2023
Outreach] – Medford, MA
- Taught 20+ high school students engineering principles including CAD, control systems, and coding
- Mentored teams in developing autonomous robots and sorting systems; 95% project success rate

Club Leadership

Rocketry Team Lead, Tufts SEDS's Rocketry Team   March 2022 – June 2025
- Scaled team from 6 to 50+ members and launched two major project teams (IREC and Hybrid Engine)
- Structured 4 IREC subteams and managed timelines leading to successful flight
- Initiated and led certification program, enabling 20+ underclassmen to achieve NAR L1/L2 certifications

Skills

Technical Skills: SolidWorks, COMSOL, Ansys, Onshape, MATLAB, Python, C++, P&ID, FEA, CFD, Labview

Manufacturing: Manual Lathe & Mill, Waterjet, Laser Cutter, 3D Printing, Composites Fabrication

Embedded: KiCad, Arduino, ESP32, LORA, I2C/SPI protocols, PCBA, PCB Design

Interests: Marathon Running, Orchid Collecting, Japanese Language, Book Collecting, Hiking