

Aidan Hoidal-Bui

aidan.hoidal_bui@tufts.edu | 978.872.3441 | linkedin.com/in/aidan-hoidal-bui | aidanhbui.github.io/Website/

Education

Tufts University | Medford, MA

05/27

Bachelor of Science in Mechanical Engineering | GPA: 3.85/4.00

Relevant Coursework: Materials and Manufacturing, Thermal Fluid Systems, Electronics and Controls, Robotics Applications, Instruments and Experiments, Engineering for the Customer

Skills

Fabrication: GD&T, DFM/DFA, CNC, Sheet Metal, Plastics, Composites, Injection Molding, 3D Printing, Waterjet, Laser Cutter

Software & Simulation: SolidWorks, Siemens NX, PTC Creo, CATIA, ANSYS, COMSOL, KiCad, MATLAB, Python, C++, Linux

Embedded & Hardware: NVIDIA Jetson Nano, Arduino, Raspberry Pi, Sensor Fusion, Oscilloscope, Multimeter, Logic Analyzer

Experience

Students for the Exploration & Development of Space (SEDS) Rocketry

September 2023 – Present

Mechanical Design Engineer

- Designed and manufactured thrust plate for 12-ft fiberglass rocket using CNC, carrying 4.4-lb payload to 10,000-ft altitude
- Researched and developed alloy and composite materials, selecting aluminum for optimal strength-to-weight ratio
- Validated structural integrity through FEA stress testing, confirming safety factor of 7 under 1,350-lbf thrust loads
- Competed in international competitions, improving flight performance score by 10% year-over-year

Atlas Urban Farms

May 2025 – August 2025

Product Design Engineering Intern

- Built open-source automated sensor hardware with Raspberry Pi for scalable crop health monitoring in multi-acre plots
- Designed and prototyped 3D-printed sensor housings and mounts with CAD and FEA, improving their durability by 40%
- Tested aluminum-filled polymers and thermally conductive plastics to optimize thermal management of sensor housings

Engineers Without Borders, Tufts Malawi Chapter

September 2023 – Present

Hardware Technical Lead

- Led multi-functional 10-person team from CAD and prototyping to field testing and data validation
- Fabricated Arduino ultrasonic sensor devices to track community water tank levels; implementation in Malawi 2026
- Developed automated sensor-driven greenhouse irrigation system, reducing annual water usage by 3,800 gallons

Tufts University, School of Engineering

January 2024 – Present

Research Assistant for Chair of Mechanical Engineering Department

- Evaluated traffic patterns to improve human-robot interactions in autonomous vehicle operations
- Analyzed velocity and passing behaviors across 2,000+ vehicles using MATLAB and Python to validate navigation models
- Developed logical methodologies, graphical data analysis, and dynamic spot-checks to enhance system verification

Projects

NVIDIA Jetson Self-Driving Car

June 2025 – September 2025

- Designed and fabricated autonomous 1:10 scale vehicle on NVIDIA Jetson Nano with custom chassis and motor control
- Integrated ultrasonic sensors, IMU fusion, and camera perception for real-time 360° localization in dynamic environments
- Implemented fault detection module to monitor sensor reliability and ensure safe operation under uncertainty
- Trained TensorFlow CNN with data augmentation on 20,000+ labeled frames for lane detection and obstacle avoidance
- Deployed computer vision system with CUDA-accelerated OpenCV preprocessing, achieving ~90% test track accuracy

NAR L1 High Power Rocket Certification

September 2024 – December 2024

- Simulated, fabricated, and launched a custom rocket powered by a high-thrust solid-propellant motor
- Applied SolidWorks, laser-cut composites, and 3D-printed components to develop fin and nose assemblies
- Optimized aerodynamic stability using simulation software and reinforced fin structure to ensure flight integrity