Neal Bagai

615-956-3020 | neal.bagai@vanderbilt.edu | linkedin/neal | github.com/nealyb26 | Nashville, TN

Education

University of Michigan — Ann Arbor, MI
M.S. in Robotics — *Planned start: Aug. 2026*

Vanderbilt University — Nashville, TN
B.S. in Computer Science, Minor in Data Science — *Aug. 2022 – May 2026*

- Coursework: Digital Fabrication, Principles of SWE, Operating Systems, Databases, Machine Learning, Cloud Computing, Algorithms

Skills

Languages: Python, Java, C/C++, HTML/CSS, SQL, R, Prolog
Frameworks & Libraries: Flask, JUnit, Selenium, OpenCV, pandas, NumPy, PyTorch
Tools & Platforms: Google Cloud Platform, Kubernetes, Arduino, Fusion 360, Slurm, LabView
Development Practices: Agile, Scrum, Jira, CI/CD, Technical Documentation

Experience

Test Engineering Intern — Jan 2026 – Present
Whisper Aero — *Nashville, TN*

- Performing firmware validation testing on commercial electric propulsor control systems during DVT stage.
- Revamping UART protocol for automated function testing and expanded logging of consumer propulsors.

Flight Software Engineer — August 2024 – Present
Vanderbilt Aerospace Design Lab (VADL) — *Nashville, TN*

- Leading the payload control software team as senior member for the 2026 competition.
- Developed embedded C++ flight logic for payload actuation and APRS radio electronics for 2025 and 2026 NASA USLI competition (Placed 5th/53 in 2025).

AI Hardware Researcher — May 2025 – January 2026
Institute for Space and Defense Electronics (ISDE) — *Nashville, TN*

- Developed research proposal: "Investigating the resilience of analog in-memory computing (AIMC) for in-space edge AI applications." Adapted analog accelerator sim (CrossSim) to model total ionizing dose effects.
- Investigated novel configurations of AIMC array to reduce radiation effects' impact on neural network accuracy.
- Findings presented as a poster at Vanderbilt Engineering Research symposium in September, 2025.

Energy Procurement and Data Analysis Intern — June 2024 – September 2024
HCA Healthcare — *Nashville, TN*

- Evaluated energy contracting methodology, energy futures pricing, hedging, and sustainability markets.
- Conceptualized and created an energy incentive and rebates web application for member hospitals to save millions of dollars for sustainable energy projects.

Data Science Researcher — January 2023 – June 2024
Data Science Institute; Maizie Zhou Computational Biology Lab — *Nashville, TN*

- Created deep learning solutions for archaeology, psychology, and education departments; deploying transformer image classifiers and fine tuned LLMs.
- Tested Spatial Transcriptomics alignment, clustering, and integration methods, recording results and processes.

Projects and Organizations

Overflight | *Python, Flask, HTML/CSS, GCP* — June 2023; Dec 2025

- Developed Flask REST API to fetch ADS-B air traffic and output overhead aircraft using Google Assistant.
- Repurposed the backend to serve 3D web visualization using three.js and Docker deployment on GCP.

CubeSat Weather Balloon Project | *Raspberry Pi, I2C/SPI, APRS* — August 2022 – June 2024

- Integrated LightARPS tracking system, tested onboard payload systems, and analyzed flight data for weather balloon launches to +90k feet as president of Vanderbilt Satellite Club (VUSAT).

EPA Rainworks Project | *Arduino, CAD* — August 2022 – June 2023

- Developed Wi-Fi connected rainwater measuring devices around campus with Engineering Without Borders as part of entry for EPA Rainworks competition.