Vedant K. Naik

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Electrical Engineering student specializing in robotics, embedded systems, and control, with hands-on experience in firmware and system prototyping, seeking opportunities to drive innovation and devise intelligent systems.

EDUCATION

Michigan State University, College of Engineering East Lansing, MI
Bachelor of Science, Electrical Engineering, GPA: 4.0 August 2022 – May 2026

Activities and Societies: IEEE South East Michigan-Chapter, Tau-Beta-Pi, MSU Solar Racing, PoliMOVE-MSU Autonomous Racing Team

EXPERIENCE

Tesla Motors Palo Alto, CA
Integration Engineering Intern August 2025 – December 2025

- Led cross-functional debugging with Motor Controls, Hardware, and Firmware teams to resolve drive-inverter firmware issues and improve system safety and service routine reliability.
- Expanded PIL infrastructure with 2+ motor models and a model-generation pipeline to extend drive-inverter firmware test suites to additional motor variants, improving control evaluation and regression readiness.
- Supported Drive Inverter firmware configurations for a new Drive Unit program, enabling downstream teams to begin validation on schedule and reducing integration delays.

Lucid Motors Newark, CA
Intern, ADAS Sensor Hardware Engineer May 2025 – August 2025

- Engineered a camera data collection system for the Lucid Gravity, enabling easy debugging and data collection for all cameras, and providing an I^2C interface for rapid prototyping and testing.
- Resolved 5+ production camera issues by analyzing sensor-level signals and raw data, collaborating with ISP vendors, sensor manufacturers, integrators, and internal teams.
- Devised the testing setup for a depth estimation sensing system for the next generation of Lucid vehicles, utilizing a cost-effective approach to repurpose existing camera packaging locations.

Smart Microsystems Lab, Michigan State University East Lansing, MI
Undergraduate Research Assistant August 2023 – Present

- Modeled a nonlinear strain sensor with significant temporal dynamics using a Time-Delay Neural Network (TDNN), achieving an $R^2 > 0.98$. Work resulted in a journal publication (DOI: 10.1088/1361-665X/adb2c7).
- Engineered an autonomous robotic blimp with 4-thruster configuration, IMU, WiFi, and LoRa connectivity; developed microcontroller PCB and firmware with micro-ROS architecture to streamline algorithm development between low-level and high-level control systems.

Intrepid Control Systems Troy, MI
Embedded Systems Intern May 2024 – August 2024

- Enhanced firmware of Zynq-based products by integrating IMU, DoIP, and GPS support using Xilinx SDK, resolving 7+ firmware driver issues to enrich product functionality.
- Added gPTP support for 10Base-T1S PHY and TC10 support for 100/1000Base-T1 Automotive Ethernet products, optimizing GPS signal reporting and enhancing system performance through the company's resource API.

SKILLS

Embedded Systems & Hardware: Altium Designer (PCB Design), Microcontroller Programming, Soldering, IoT Prototyping, Fusion 360 (CAD), Verilog (HDL), Xilinx SDK, Datasheet Interpretation, Oscilloscope

Programming & Simulation: C, C++, Python, MATLAB, Simulink, git (version control), Linux, Docker

Robotics & AI: ROS 2 (Robot Operating System), OpenCV, TensorFlow (Keras)