

Samit Madatanapalli

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US Citizen

WORK EXPERIENCE

Esotaira (Startup – Military Omnidirectional UAV)

08/2025 – Present

Capstone – Embedded Software Lead

University Park, PA

- Developed embedded firmware in Arduino C++ to control side-mounted UAV propellers, achieving precise 0–90° tilt motion and dynamic thrust modulation for omnidirectional flight for advanced military applications.
- Implemented a real-time web interface using HTML, CSS, and JavaScript, enabling remote operation, user-adjustable thrust levels, and live telemetry visualization for tilt position and performance data.
- Coordinated weekly meetings with Esotaira sponsors and effectively presented technical updates, managed project materials procurement within a set budget, and upheld project documentation to align engineering progress with sponsor expectations

Honeywell

05/2025 – 08/2025

Intern - Software Engineer

Pittsburgh, PA

- Designed and deployed a mobile device free fall feature for the Honeywell embedded Linux devices, implementing real-time sensor processing in C and validating functionality through drop testing using specialized equipment
- Reverse-engineered legacy battery charger systems by analyzing MCU-to-battery communication (I2C, UART, 1-Wire) using Saleae logic analyzers, Perl scripts, and DMM, enabling preservation of critical functionality in next-generation chargers and ensuring safe, reliable operation with both new and legacy batteries
- Developed Python and shell scripts to capture Adaptive Frequency Hopping (AFH) data from Honeywell Bluetooth headset connections and convert logs into 2D channel map visualizations, supporting efforts to understand RF behavior behind a major customer-reported connectivity issue
- Automated performance log analysis by building a Python tool to extract and visualize performance metrics from Honeywell embedded Linux device logs, streamlining debugging workflows and eliminating manual analysis for the electrical team

Flourish: Grow with Self-Care (Startup – Selfcare mobile app)

01/2025 – 05/2025

Intern - Full Stack Mobile Application Engineer

Remote

- Led end-to-end development of the “Plants Encyclopedia” screen, crafting an animated, interactive UI with expandable dual-card layouts, horizontal scrollable selections, and a live search bar using JavaScript and React Native
- Built and integrated backend services with Appwrite and Python, merging plant metadata and user preferences to deliver dynamic, personalized content across platforms
- Collaborated closely with product and design teams to translate feature requirements into intuitive user interfaces, ensuring alignment with the app’s visual identity and user experience goals

Thermo Fisher Scientific - Persistent Systems

05/2024 – 08/2024

Intern - Data Engineer Mentee

Remote

- Refactored and optimized my personal AI Fitness Tracker project using enterprise-grade tools like ER/Studio, SQL, and Excel to align with professional data modeling and governance standards
- Designed normalized database schemas to support scalable storage of user health metrics, dietary inputs, and AI-generated nutritional analysis, improving query efficiency and data integrity
- Collaborated with mentors in daily syncs to refine workflows and apply best practices in data transformation and reporting

EDUCATION

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| The Pennsylvania State University College of Engineering | Expected Graduation: 05/2026 |
| <ul style="list-style-type: none">B.S. in Computer EngineeringDean's List 2023-2024-2025 | University Park, PA GPA: 3.46 |

PROJECTS

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| AI Surveillance Drone (EE497 Final Project Competition) | 09/2025 – Present |
| <i>Embedded Lead</i> | <i>University Park, PA</i> |

- Designed and engineered a self-stabilizing surveillance drone featuring custom flight controls, real-time video streaming, and sensor telemetry, targeting field surveillance applications.
- Developed AI-driven image recognition to overlay real-time object labels onto the video feed for intuitive scene awareness
- Led system integration, hardware prototyping, and iterative field testing, optimizing drone reliability and usability within the course timeline.

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| 5-Stage Pipelined Processor with Hazard Detection and Forwarding | 08/2024 – 12/2024 |
| <i>Independent</i> | <i>University Park, PA</i> |

- Designed and implemented a pipelined processor in Verilog using Vivado, integrating core modules like ALU, control unit, memory, and hazard/forwarding logic to support 5-stage execution
- Verified functionality through waveform analysis and iterative debugging, ensuring accurate instruction execution under data/control hazards

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| Audio Amplifier Circuit Design Project | 04/2024 – 05/2024 |
| <i>Test Lead</i> | <i>Erie, PA</i> |

- Designed and built a multi-stage amplifier circuit, including a summing op-amp (stereo to mono), tone filter, voltage divider, LED volume indicator, and fixed-gain amplifier using NPN/PNP transistors
- Validated signal processing accuracy using oscilloscopes, function generators, and industry data sheets
- Presented project to professor and peers, demonstrating functionality, optimizations, and potential applications

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| Artificial Intelligence Fitness Tracker Web Application | 07/2023 – 03/2024 |
| <i>Independent</i> | <i>Pittsburgh, PA</i> |

- Developed a full-stack fitness tracker using Java Servlets, HTML, CSS, and JavaScript, offering an intuitive and natural interface for users to log health data and receive personalized insights
- Integrated ChatGPT API for natural language dietary input, providing real-time nutritional analysis including calories, protein, and carbohydrates
- Designed and connected a MySQL database to securely store user metadata, enabling custom caloric intake calculations

SKILLS

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| Software: C, Python, Java, HTML/CSS/JS/React, Verilog, SQL, MySQL, Appwrite, OpenCV, TensorFlow, Git, Vivado, ER/Studio, HCS12 Assembly, VS Code, Unity, Linux command line, shell scripts, service files, Perl scripts |
| Hardware: Arduino, microcontrollers, sensor integration, circuit design, waveform analysis, oscilloscopes, function generators, Saleae logic analyzer, breadboard |
| Professional: Problem solving, debugging, teamwork, communication, JIRA/Confluence documentation, project management |