Alexander Prentiss

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Education

University of Massachusetts Amherst – Commonwealth Honors College **Anticipated May 2027**
BS in Computer Engineering, Minor in Mathematics | GPA: 3.615

Relevant Coursework

Applied Linear Algebra, Hardware Design for Machine Learning Systems, Hardware Organization and Digital Design, Intro to Embedded Systems, Intro to Security Engineering, Systems Programming

Experience

Mobius Industries **May 2025 – Present**
Robotics Systems Engineering Intern *Cambridge, MA*

- Architected an industry-grade control system featuring segmented hardware modules and robust compute communication enabling dynamic process handling and compliance with safety requirements
- Implemented a phase-locked loop (PLL) to reject high-frequency encoder noise while tracking low-frequency drift, increasing sorting throughput by 20%
- Built a ROS 2 workspace within a Docker service, structuring packages for control, inference, sensing, and inter-process communication to enable modular robot software deployment
- Engineered an autoencoder-based background subtraction system to detect and extract belt feed data, reducing manual labeling time by several hours and enabling efficient CNN training

Skills

Altium, ATMega, Bare Metal Programming, BeagleBone, C, C++, Docker, Embedded Linux, Feature Engineering, Fusion360, Git, Linux, Logisim, Java, MatLab, Multimeter, NumPy, OpenCV, Oscilloscope, PLC, Python, PyTorch, ROS2, Soldering, SQL, STM32

Projects

System Level ISP Simulation **October 2024**

- Designed an ISP network simulator in Python utilizing Dijkstra's and Prim's algorithms for routing, path validation, and loop detection on a graph based network

News Website / Display **May 2023**

- Built a Flask app in Python to return API-based news headline from user queries; cached results in SQLite3
- Enabled real-time news display by sending UDP packets from Ubuntu server to an embedded LED matrix

Real Estate Price Prediction **December 2024**

- Created a Python linear regression model with MSE ~0.5; optimized training using vectorized linear algebra

8-Bit Arithmetic Logic Unit **January 2025**

- Simulated and constructed an 8-bit ALU in Logisim, then implemented it on a breadboard using transistor logic
- Debugged timing and logic errors using an oscilloscope and multimeter to verify circuit behavior

Command Line Poker **January 2025**

- Developed a CLI poker game in C with memory-managed logic based AI opponent
- Improved user experience using ASCII graphics to simulate cards and betting visually in the terminal

Activities & Interests

IEEE Micro-Mouse, Intramural Basketball, Reading, Rock Climbing, Weight Lifting, Skiing