

# Nathan Hunt

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<https://nhunt1984.github.io/MyPortfolio/index.html>

## EDUCATION

### University of Massachusetts Amherst

Anticipated May 2027

Bachelor of Science in Computer Engineering

## RELEVANT COURSEWORK

Advanced Programming (Python), Advanced Programming (C++), Analytical Tools for ECE, Computational Tools for ECE, Circuits & Electronics I, Intro to Digital & Computer Systems, Intro to Electrical & Computer Engineering, Security Engineering, Systems Programming, Hardware Organization & Digital Design

## PROJECTS

### DIY Camera using Teensy 4.1, ArduCam Mega, and LED Screen

- Designed custom C/C++ firmware drivers on Teensy 4.1 to interface with the camera module and stream frames to an LED display.
- Designed a custom PCB in KiCad for button interfaces and signal routing.
- Modeled and 3D-printed a camera chassis in Fusion 360.

### Wrote Drives for BNO055 IMU on Raspberry Pi Pico

- Researched BNO055 architecture/register map and operating modes.
- Converted raw sensor frames to SI units and managed calibration/offsets.
- Set up CMake/Pico SDK; configured I<sup>2</sup>C/GPIO; added diagnostics, power-modes, and error handling.

### Created and Optimized a Text Editor

- Created and optimized a terminal text editor that reads raw keystrokes and maintains a live buffer.
- Implemented a doubly linked-list core with O(1) cursor-adjacent edits
- Microbenchmarked ~0.05 µs insert and ~0.02 µs backspace (100k–500k ops excluding rendering)
- Built a header/API and modular .c/.h structure with boundary checks and robust error handling.

### Built a linear regression model to predict house prices

- Implemented custom MSE loss, analytic gradient, and weight updates, and created visual plots.
- Trained and evaluated on separate data sets for training and test data.
- Plotted learning curves to monitor convergence, and added error handling to keep long runs stable.

### Worked with visual processing in C++

- Built a matrix-driven rendering that generates a dynamic image in real time.
- Controlled Image change with x and y bounds.

## EXPERIENCE

### Power/Thermals Subteam Member – UMASS CubeSat Team

September 2025–present

Team Member

- Writing firmware and developing a custom PCB for the Battery and Power Distribution Systems
- Produced a research paper on a comprehensive radiation mitigation plan for the power subsystem
- Coordinated with subsystem teams to assess power budgets and create the satellite PDU

### UNH Electric Vehicle Organisation

September 2023–December 2023

Team Member

- Diagnosed and repaired EV subsystems independently
- Collaborated with a team to convert gas vehicles to electric vehicles
- Worked with motors, wiring, gearing; used 3D modeling/printing; programmed remote controls

## SKILLS

Programming: Python, C++, C, Java, JavaScript, ARMv8, HTML, CSS

Tools: KiCad, LTspice, Multisim, MATLAB, Fusion 360, SolidWorks, AutoCAD, Excel, PowerPoint, Word

Hardware: PCB design, soldering; Arduino, Raspberry Pi, BeagleBone