

OTTO HALBHUBER

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EDUCATION

Cornell University, College of Engineering

2024 – Present

B.S. Electrical and Computer Engineering, Minor: Computer Science

Technical Coursework GPA: 3.62 / 4.0

Relevant Coursework: Embedded Systems, Microelectronics, Probability, Signals and Systems, Digital Logic, Circuits, Data Structures, Discrete Structures (Fall 2026: Computer Architecture, Systems Programming, Functional Programming, Microcontrollers)

SKILLS

Programming: C, C++, Python, MATLAB, Java, ARM Assembly, RISC-V Assembly, SystemVerilog

Hardware & Embedded: Raspberry Pi Pico, Arduino, FPGA, SPI, Interrupts, RTOS, Oscilloscopes

Systems & Tools: Linux/Unix, Git, Bash, PowerShell, LTspice

EXPERIENCE

Software Engineering Intern

May – Aug 2026

Lockheed Martin, Rotary and Mission Systems — Mount Laurel, NJ

- Developed DROUGHT (Direct Reporting and Organization of Usage Grid and HTML Table), a Python application that automatically ingests, parses, normalizes, and visualizes software verification results across multiple Aegis Combat System baselines and configurations
- Designed a modular parsing framework to extract structured verification results from software test artifacts, enabling scalable cross-baseline analysis
- Built an interactive PyQt desktop application supporting filtering, sorting, and color-coded status tracking to accelerate investigation of software verification failures

Research Assistant

Feb 2025 – Present

ADVERSARY Research Group, High Energy Defense Thrust — Ithaca, NY

- Designed, simulated, breadboarded, and soldered a photodiode-based laser detection system using a transimpedance amplifier to convert current spikes into measurable voltage signals
- Developed embedded firmware in C on a Raspberry Pi Pico using SPI-driven multi-ADC polling, interrupt-driven event detection, and real-time threshold processing for laser signal acquisition

Teaching Assistant — ECE 2100: Circuits

Jan 2025 – Present

Selected for CS 3420: Embedded Systems (Fall 2026)

Cornell University — Ithaca, NY

- Led lab sections for circuit construction and debugging using breadboards, oscilloscopes, and function generators
- Graded lab reports and exams; collaborated with course staff to maintain consistent grading standards

Electronics Repair Technician

May - Aug 2024, May - Aug 2025

Techtronics Mobile Solutions — New York, NY

- Diagnosed and repaired 50+ consumer electronics in high-pressure, time-sensitive conditions.
- Reverse-engineered devices via component isolation/examination and multimeter testing to restore functionality.
- Configured and reimaged Windows/Linux systems; leveraged shell tools for operating system recovery.

PROJECTS

Embedded Operating System with Virtual Memory & UART Shell — C, ARM Assembly

- Built a preemptive embedded OS on ARM Cortex-M0+ using PIT interrupts, SVC traps, and exception-based context switching
- Implemented multi-queue scheduler supporting Rate Monotonic Scheduling for real-time tasks, Round-Robin scheduling for non-RT tasks, and CPU utilization tracking
- Designed virtual memory system with per-process address spaces, dynamic allocation, and mapping to non-contiguous physical memory
- Enforced user/kernel separation through an SVC-based syscall interface controlling memory allocation, reads, writes, and frees
- Developed custom heap allocator with metadata, ownership validation, invalid-free prevention, and cross-process access protection
- Built UART shell for process control, memory operations, password-protected reads, and runtime system monitoring