JACOB GERSON

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EDUCATION

Tufts University Medford, MA
BS, Electrical Engineering May 2027
Cumulative GPA: 3.78; Coursework: Embedded Systems, Comp. Science & Organization, Dig. IC Design, AC Electronics, Communication Systems, Quantum Physics, Differential Equations, Intellectual Property

WORK EXPERIENCE

Tufts University - Department of Electrical and Computer Engineering Somerville, MA
Teaching Assistant - Intro to Engineering; Embedded Systems September 2025 - Present
- Teaching engineering students to run uPython, drive peripheral devices, leverage IoT, and build webpages on ESP32s
- Leading labs/office hours focused on STM MCUs, with topics in UART, Timing, SPI, ADC, and memory maps

Dottir Labs Somerville, MA
Optics/Hardware Engineering Intern Summer 2025
- Developed Python drivers using LabVIEW-generated DLLs, enabling reliable and scalable hardware/software integration with optical equipment (Thorlabs, Sirah Products) to establish experimental workflow for in-lab GUI
- Programmed from scratch a modular, object-oriented software framework with supporting documentation
- Assisted manufacturing and deployment of patented probes for pilot commercial product
- Supported installation, calibration, and operation of Dottir's patented Swept Source Raman Spectroscopy system

NREIP – Naval Research Lab Washington, DC
Naval STEM Software Intern Fall 2024
- Wrote Python code manipulating planetary data to determine appropriate aperture masking for NRL telescopes
- Modified existing data processing pipeline from James Webb Space Telescope to accommodate NRL telescopes
- Learned key optics concepts including aperture masking, atmospheric turbulence and Fourier transforms

Building Envelope Materials Boston, MA
Software Engineering Intern Summer, Winter 2024
- Conceptualized and developed IoT solution connecting pressure sensors, Raspberry Pi, and public webpages
- Designed a web interface enabling users direct access to the Pi's API to capture and post pressure data
- Independently coded custom JSON-based data endpoints to store and retrieve sensor readings
- Prototyped with wired solution using Arduino IDE and complementary Adafruit peripherals

United States Naval Observatory (USNO), Precise Time Department Washington, DC
Master Clock Support Tech Summer 2023
- Shadowed and assisted USNO Electrical Engineers and Technicians deploying new Master Clock
- Assembled and installed Cisco servers, routers, and firewalls
- Acquired working knowledge of CAT8 and Fiber network transfer types

PROJECTS

Embedded Smart Watch Mini-Golf Game ***Final Project - Embedded Systems***
- Created IMU controlled game using the ARM Cortex-M4 STM32 MCU; employed embedded C to harness on-chip peripherals, deploy system interrupts, and develop self-built SPI, I2C and UART drivers

Wireless Paintbrush - Embedded ESP32 Sensor with MEMS IMU ***Personal Project***
- Self-guided project to learn KiCAD; employed Espressif's Devkit resources to design a compact, wireless, battery powered embedded sensor; developed C++ firmware via ESP Prog Board; power consumption considerations

5 Stage Pipelined ARM CPU ***Final Project - Computer Organization***
- Developing a multi-cycle pipelined 64 bit ARM-LEGv8 CPU with forwarding and hazard detection in RTL VHDL
- Performs rigorous hardware verification through GHDL simulation and GTKWave signal analysis

SKILLS

Programming: Python, Embedded C, C++, PlatformIO, VHDL, Verilog, ARM Assembly, Linux, Git, Latex
Electronics: KiCAD, ESP32, STM, Arduino, Raspberry Pi, FPGA, GHDL, AC/DC Circuit Design, LTspice