

ETHAN LIU

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EDUCATION

Bachelor of Science in Computer Engineering

Expected: May 2026

The Pennsylvania State University

Relevant Coursework: Embedded Systems Application Development, Microprocessors & Embedded Systems, Data Structures & Algorithms, Computer Architecture, Operating Systems, Communication Networks, Signals & Systems, Systems Programming, Object-Oriented Programming, Digital Design, Computer Organization & Design

SKILLS

Programming Languages: Java, JavaScript, Python, C++, C, C#, Rust, Verilog, Assembly, SQL

Human Languages: English (Native), Chinese (Native), Spanish (A2)

Tools: Linux, Git, GDB, Xilinx Vivado, Arduino, NI LabVIEW, React Native, MonoGame, Azure, Jira, ThinLinc, Confluence, Snowflake, Flask

EXPERIENCE

Iridium Communications: Satellite Network Operations Center

August 2025 – Present

Satellite Operations Software Engineering Intern; Leesburg, VA

- Designed and implemented 50+ automated Selenium test cases, reducing manual verification time by 60% and expanding regression coverage across mission-critical workflows

Iridium Communications: Satellite Network Operations Center

May 2025 – August 2025

Satellite Operations Software and Space Engineering Intern; Leesburg, VA

- K-Band Team: Streamlined K-band software supporting Iridium's satellite crosslink system, increasing feeder link data retrieval throughput by 750% and automating hazardous crosslink region detection across the global satellite network
- Operations Team: Developed automation tools to optimize daily satellite operations, replacing a multi-layered manual software upload workflow with a single wrapper script invocation to improve efficiency and deployment reliability

The Pennsylvania State University: Math LA Program

August 2024 – Present

Multivariable Calculus Learning Assistant; University Park, PA

- Support multivariable calculus instruction by facilitating in-class problem solving for sections of 30+ students
- Lead weekly evening sessions to reinforce course concepts and facilitate peer learning

The Pennsylvania State University: School of Electrical Engineering

August 2024 – Present

Electrical Engineering Lab Assistant for Circuits and Devices; University Park, PA

- Prepare laboratory instrumentation and troubleshoot analog and semiconductor device experiments in real time

PROJECTS

IridiumNOW IDE | Python, Javascript, Arduino, C++, CSS, HTML

- Developed a full-stack IDE to simplify programming for the Iridium 9704 Development Kit using Arduino
- Automatically generates corresponding Arduino firmware code from blocks to support beginners—ideal for high school and early college students working with satellite-connected hardware
- Engineered a user-friendly interface featuring drag-and-drop block diagrams (inspired by Scratch), allowing users to visually configure sensors with labeled images

FreshGuard | Raspberry Pi 5, FastAPI, Python, PostgreSQL/SQLite, OpenCV, Tesseract, htmx, Tailwind

- Built a local-first fridge inventory tracker to reduce food waste by logging items via Pi Camera barcode scanning + OCR expiration extraction, then estimating expirations and computing item states (fresh/warning/expired)
- Developed a FastAPI + SQLAlchemy backend with CRUD APIs for items and scanning endpoints, backed by PostgreSQL (production) and SQLite (testing)
- Implemented scheduled jobs to recompute states daily and trigger alerts for items expiring within 48 hours, with notifications via UI (and optional Sense HAT + piezo on Pi)

Pipelined CPU | Verilog, FPGA, Xilinx Vivado, MIPS

- Built a 32-bit 5-stage pipelined MIPS CPU (IF, ID, EXE, MEM, WB) with data forwarding and hazard management
- Implemented full forwarding logic and hazard detection to eliminate data hazards; validated execution of arithmetic, memory, and branch instructions on FPGA