

ANDY HUANG

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EDUCATION

Rensselaer Polytechnic Institute

B.S. Computer Systems Engineering

Expected May 2026

Troy, NY

EXPERIENCE

HARP Research Inc.

May 2025 - August 2025

Full Stack Development Intern

Troy, NY

- Contributed to feature development and bug fixes for an internal project management and time-tracking bot used by the company team on Discord.
- Collaborated on a shared GitHub codebase, creating pull requests, participating in code reviews, and ensuring code quality through CI/CD pipelines.
- Applied containerization and database practices using Docker and PostgreSQL to support feature development, testing, and debugging in a live team codebase.

Rensselaer Polytechnic Institute

January 2024 - September 2025

Undergraduate Researcher

Troy, NY

- Spearheaded development of Music X+, a hybrid web-based music and information hub, improving student engagement and lab workflow efficiency.
- Built a web interface to streamline song requests, display attendance, and simplify music control for students.
- Developed a Python Flask backend that leveraged the Genius API to deliver seamless music discovery and playback.
- Integrated MySQL database to log student attendance, enhancing accuracy and syncing with university records.
- Implemented lightweight inter-computer communication using UDP sockets to transmit single-string data packets between two machines on the same network.
- Automated lab staff identification by retrieving Notion personnel data and sending recognized staff info to a networked display.

Rensselaer Polytechnic Institute

May 2024 - December 2024

Mercer XLab Staff

Troy, NY

- Managed lab equipment inventory, overseeing equipment loans and ensuring timely returns to minimize disruptions.
- Facilitated a microcontroller workshop for engineering students, expanding their knowledge of embedded systems.
- Designed a Notion-based learning module on microcontrollers for students with limited C/C++ and circuit skills.

PROJECTS

OLED Weather Display

April 2025

- Designed and implemented a real-time weather and clock display on the ESP32 using FreeRTOS, enhancing user experience with reliable, low-latency data updates.
- Synced time via SNTP and fetched weather data over HTTP using WiFi, ensuring timely real-time updates.
- Integrated an I2C OLED display with LVGL, optimizing rendering and UI responsiveness under RTOS constraints.
- Managed concurrent tasks with precise scheduling and inter-task communication using FreeRTOS queues to coordinate data parsing, display updates, and network operations.

SMART Fire Alarm System

August 2024

- Designed a WiFi-based communication system enabling fast, secure data flow between the device and cloud, ensuring reliable alerts for at-risk users.
- Configured a Raspberry Pi to collect sensor data, trigger alarms on threshold breaches, and sync with AWS IoT, enabling cloud-based monitoring when internet is available.
- Linked a ESP32 and Raspberry Pi via MQTT to drive a remote vibrational alarm for hearing-impaired users.

TECHNICAL SKILLS

Languages: C, C++, Python, HTML, CSS, JavaScript, MIPS Assembly

Software & Protocols: ESP-IDF, FreeRTOS, MySQL, PostgreSQL, Docker, Linux, Git, UART, SPI, I2C, BLE, MQTT, UDP

Hardware Platforms: ESP32, STM32, Raspberry Pi

LEADERSHIP / EXTRACURRICULAR

Delta Phi Fraternity

November 2023 - Present

House Manager

Rensselaer Polytechnic Institute

- Managed day-to-day operations of the fraternity house, overseeing routine cleaning, maintenance, and facility upkeep throughout the semester.
- Served as primary liaison with alumni, communicating maintenance needs and coordinating contractors or external support when necessary.