Paul Wang

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Skills

Languages: C, C++, MATLAB, Assembly, Python
Embedded/Hardware: ARM Cortex-M, Raspberry Pi, VHDL, FPGA, I2C (I^2C), SPI, UART, PWM
Electrical: Soldering, wiring, PCB design
Tools: Git, Onshape

Experience

Engineers Without Borders — Malawi International Project *Tech Lead and Treasurer* Sept 2023 – Present

- Built Raspberry Pi greenhouse controller reading soil moisture via sensors and scheduling irrigation for 5 pumps across ~50 plants
- Developed C++ desktop application for plant database management enabling teammates to configure watering thresholds and schedules without modifying source code
- Designed community water-catchment system serving 1,000+ residents and managed $50,000+ budget allocation across three active international projects as treasurer

The IDEA Lab @ Tufts *Hardware Project Lead* June 2025 – Present

- Designed low-latency DSP audio effects processor on ARM Cortex-M4 with FPU running at 44.1 kHz sample rate using DMA double buffering and FFT-based spectral processing
- Implemented motion-controlled tremolo effect mapping calibrated IMU tilt angles to modulation envelope depth on 12-bit ADC/DAC signal chain
- Optimized full signal path including ADC/DAC timing, DMA buffering, and control parameter smoothing to achieve responsive real-time performance with zero audible artifacts
- Led 12-person engineering team through weekly development sessions and bi-weekly client reviews with Berklee Director of Technology to deliver on schedule

Early-Stage Venture Project *Product Management and AI Intern* May 2025 – Aug 2025

- Built Neo4j knowledge graph with ~500 nodes and 400+ relationships paired with automated prompt pipeline to extract and map stakeholder pain points from interview transcripts
- Developed go-to-market outreach strategy for pre-launch animal-rescue startup including target audience segmentation, sample messaging, and weekly content calendar

Projects

Universal Machine C

- Implemented 32-bit virtual machine with segmented memory architecture, eight general-purpose registers, and custom instruction set using memory-mapped instruction decode and register-based execution loop

FPGA Guitar Hero VHDL, VGA, Python

- Designed game state machine and VGA graphics pipeline processing PS2 guitar controller input with integrated audio synthesis, optimized ~30,000 lines of sprite data into ~200 lines ROM-compatible format using Python compression tool

Microcontroller MP3 Player C, I2C, UART

- Built MP3 player reading tracks from SD card and controlling OLED display via I2C protocol with external interrupt handlers for playback control and UART debugging interface on STM32

Leadership

Tufts Club Tennis *Vice President* Apr 2025 – Present

- Coordinate practices and manage home and away match logistics for 30+ member team, led team to sectionals and nationals placing top 40 nationally

Education

Tufts University, Medford, MA — Expected May 2027
B.S. in Computer Engineering; Minor in Computer Science