Charlie Chen

charliechen@college.harvard.edu | https://cchenalds17.github.io | U.S. Citizen

EDUCATION

Harvard University Cambridge, MA

Bachelor of Science in Electrical Engineering, Minor in Computer Science | GPA: 3.96/4.0 May 2027

- Relevant Courses: Computing Hardware, Circuits Devices & Transduction, Systems & Control, Physics E&M, Systems Programming, Intro to Machine Learning (MIT), Intro to Distributed Computing, Data Structures & Algorithms

Friends Select School Philadelphia, PA

High School Diploma | GPA: 4.31/4.0, Phi Beta Kappa | Student President, Robotics Club Founder June 2023

TECHNICAL SKILLS

Hardware: SystemVerilog, FPGA Programming (Xilinx), Vivado, Hardware Verification, LTSpice, Analog & Digital Circuits, Op Amps, Oscilloscopes, Multimeters, Function Generators, Soldering, Arduino

Software: Python, MATLAB, C, Git, Linux

ENGINEERING PROJECTS

MIPS Multicycle Processor & Assembler | SystemVerilog, FPGA, Vivado, Python Nov 2025

- Designed multicycle MIPS CPU in SystemVerilog with modular ALU, register file, control unit, & memory interfaces
- Implemented control-path FSM & datapath routing for R-, I-, & J-type instructions with hazard-free execution
- Verified functionality using self-written testbenches & waveform inspection in Vivado, then deployed on Xilinx FPGA
- Wrote Python MIPS assembler to translate assembly code to 32-bit machine code with label, branch, & jump resolution

Reverb Karaoke Machine | Filters, Op Amps, DAC, Soldering April 2025

- Designed high- & low-pass filter stages with op-amp buffers to bias, scale, & condition audio signals for ADC input
- Tuned filter cutoffs (50 Hz / 1.2 kHz) to isolate voice band & suppress low-frequency rumble & high-frequency noise
- Assembled 10-bit DAC with low-pass reconstruction filtering to reduce stepping noise for clean analog output
- Implemented firmware-driven successive-approximation ADC to obtain consistent, timing-controlled samples
- Prototyped, soldered, & tested chain with oscilloscope to verify frequency response & eliminate clipping/noise artifacts

Mask Detector | PyTorch, OpenCV, Arduino Sept 2021 – Dec 2022

- Built relay-driven actuation circuit & wrote Arduino firmware for microcontroller-powered water spraying mechanism
- Developed face detection + mask classification pipeline to spray unmasked people with water with 91% accuracy
- Integrated serial communication between Python & microcontroller for synchronized inference + actuation

EXPERIENCE

Harvard Ability Lab | Cambridge, MA June – Nov 2025

Undergraduate Researcher

- Built human-mounted rig for supernumerary robotic arm by designing custom CAD chest plate & mechanical harness
- Designed data collection protocol with varying task complexity & movement levels to benchmark model performance
- Captured & synchronized 10,000+ frames of egocentric video & actuator data of task execution for VLA fine-tuning

ADDITIONAL SKILLS & INTERESTS

Fluent Languages: English, Mandarin

Interests: Hiking, Cooking, Running, Speedcubing