

Charlie Chen

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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

Software & Programming: SystemVerilog, Vivado, Arduino, MATLAB, LTSpice, Python, C, Git, Linux
Hardware & Systems: FPGA Programming, Analog & Digital Circuit Design, Embedded Systems, Oscilloscope, Function Generator, Soldering, Hardware Verification

ENGINEERING PROJECTS

MIPS Multicycle Processor & Assembler SystemVerilog, FPGA, Vivado, Python	Nov. 2025
• Designed & implemented multicycle MIPS processor in SystemVerilog supporting R-, I-, & J-type instructions	
• Implemented control FSM & multistage datapath, integrating ALU, registers, & memory modules for efficient execution	
• Simulated, synthesized, & deployed processor on Xilinx FPGA, validating hardware functionality via waveform analysis	
• Built single-pass Python MIPS assembler to translate assembly code to 32b machine code with label & branch resolution	
VLA Robot Arm Python, Arduino, Computer Vision	June – July 2025
• Wrote camera handler to undistort, crop, & stream Meta Aria glasses video into SmolVLA recording/inference pipeline	
• Developed Arduino firmware to drive arm servo (with stabilizing capacitor) over lightweight custom serial protocol	
• Engineered teleoperation recorder to log camera frames, servo angles, & tasks to curate dataset for model fine-tuning	
• Implemented autonomous action inference loop that parses inputs & issues live servo commands to complete task	
Reverb Karaoke Machine Filters, Op Amps, DAC, Soldering	April 2025
• Built passive high-pass & low-pass filter stages with op-amp buffers to condition microphone signals for Arduino ADC	
• Coded Arduino signal processing firmware at 8 kHz sample rate, featuring dynamic compression and reverb effects	
• Engineered 10-bit R-2R DAC with low-pass output filters to reconstruct & smooth processed audio for speaker playback	
Mask Detector PyTorch, OpenCV, Arduino, Embedded Software	Sept. 2021 – Dec. 2022
• Built face detection pipeline with optimized MobileNetV2 (91% accuracy) to spray unmasked people with water	
• Wrote Arduino firmware for serial-controlled relay actuation and prototyped/soldered the relay & motor circuit	

EXPERIENCE

Harvard Ability Lab Cambridge, MA	June – Nov. 2025
Undergraduate Researcher	
• Analyzed vision-language-action model performance on egocentric robotic arms in human-robot interaction tasks	
• Engineered human-mounted rig for supernumerary robotic arm by designing custom CAD chest plate & harness	
• Teleoperated arm to build high-fidelity 10K+ frame dataset for VLA fine-tuning & quantified movement using OpenCap	
• Designed protocol with varying interaction complexity, human movement, etc. on ADL tasks to benchmark performance	

ADDITIONAL SKILLS & INTERESTS

Fluent Languages: English, Mandarin

Interests: Hiking, Cooking, Running, Speedcubing