

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, Git, Linux

Hardware & Systems: FPGA Programming, Analog & Digital Circuit Design, Embedded Systems, Oscilloscope, Function Generator, Soldering

ENGINEERING PROJECTS

32-bit Arithmetic Logic Unit (ALU) SystemVerilog, FPGA, Vivado	Sept. - Oct. 2025
• Built gate-level ALU using hierarchical modular design for arithmetic, logic, & shift operations via muxes & submodules • Designed carry-lookahead adder to reduce propagation delay & integrated zero, equal, & overflow flag circuitry • Created comprehensive testbenches for edge-case validation & synthesized design on Xilinx FPGA using Vivado	

VLA Robot Arm Python, Arduino, Computer Vision	June – July 2025
• Wrote camera handler to undistort, crop, & stream Meta Aria glasses video into SmoVLA 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