

# Charlie Chen

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## EDUCATION

<b>Harvard University</b>	Cambridge, MA
<b>Bachelor of Science in Electrical Engineering</b> , 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	
<b>Friends Select School</b>	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

<b>32-bit Arithmetic Logic Unit (ALU)</b>   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	

<b>VLA Robot Arm</b>   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	

<b>Reverb Karaoke Machine</b>   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	

<b>Mask Detector</b>   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

<b>Harvard Ability Lab</b>   Cambridge, MA	June – Nov. 2025
Undergraduate Researcher	

• Analyzing 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