

Beverly Xu

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EDUCATION

Harvey Mudd College | B.S. in Engineering

Relevant coursework

GPA: 3.9

Digital Elec & Comp Engineering · Intro to Engr Design/Manufacturing · Electromagnetic Theory & Optics

PUBLICATIONS

"cHyRRT and cHySST: Two Motion Planning Tools for Hybrid Dynamical Systems," IEEE CASE, August 2025

– First author and presenter, implemented both planners with acceptance into Open Motion Planning Library.

ROBOTICS EXPERIENCE

Electrical and Hardware Member, Harvey Mudd RoboSub Team, Claremont, CA

September 2025 - Present

- Designed three-stage 25-40 kHz hydrophone signal amplifier with 20,000-120,000x adjustable gain, DC bias stages to preserve signal through single-rail op-amps and protect Teensy input, and low-pass filter to reduce noise from adjacent motors. Integrated subcircuit into main signal processing board. Designed in KiCAD and simulated using LTSpice.
- Designed torpedo launcher using SolidWorks FEA and flow simulation to model force distribution and fluid dynamics. Manufactured 2-inch diameter launcher using Fusion CAM and DPM SX3P Bed Mill.

Software Lead, Mechanical Science and Engineering Robotics Team, Saratoga, CA

August 2021 - June 2025

- Led group of 6 in control systems implementation (PID, odometry, current-limiting), sensor fusion, and root-cause analysis.
- Facilitated adoption of LiveShare to encourage collaborative Java programming and hands-on learning.

RESEARCH EXPERIENCE

Intern, Lab for Investigations of Local Air Quality, Claremont, CA

September 2025 - Present

- Prototyped CO2 level indicator with 80% cost reduction from comparable commercial option, and designed electronics box in SolidWorks using edit-in-context assembly workflow.
- Wrote Linux, BASH, and IGOR scripts for Pi and Windows devices to stream data to Firebase from PurpleAir and meteorological sensors running legacy middleware.

NSF-funded Researcher, RoboLand Lab @ USC, Los Angeles, CA

May 2026 - August 2026

- Designed and prototyped novel locomotion test bed with spring-loaded obstacles, mounted on custom sliding mechanism. Enabled repeatability and durability over 100+ trials. Redesigned caterpillar-inspired robot to decrease gear slack by 50%.
- Formulated research question on legged locomotion, leveraging spring-loaded obstacles. Tested hypothesis with trials using MoCap motion tracking system, and performed data cleaning and analysis in Python.

Intern, UC Santa Cruz, Hybrid Systems Lab, Santa Cruz, CA

August 2023 - August 2025

- Implemented and benchmarked 2 motion planners for hybrid dynamical systems (collision-resilient quadcopter, bouncing ball)

PROJECTS

Record player with motorized turntable, Claremont, CA

July 2026 - Present

- Designed and bench-tested custom controls/power board for sensing, audio, and lighting.
- Used KiCAD for schematic capture and PCB layout, soldered SMD components onto bare board using stencil and reflow.

Analog alarm clock with single motor-actuated hands, Claremont, CA

April 2026 - May 2026

- Designed custom gear box in SolidWorks with 1:60:360 gear ratios, evaluated dynamics using motion study.

Dance floor tile electricity generator, Saratoga, CA

January 2025 - May 2025

- Designed mechanism with 150 lbs max load to backdrive motor, leveraging cross-functional collaboration with a team of 3.

TECHNICAL SKILLS

Mechanical/Manufacturing: SolidWorks, Fusion, 3D printing, CAM, DFM

Electrical: embedded systems, mixed-signal design, circuit simulation, KiCAD, LTSpice, Raspberry Pi, Arduino, soldering

Software: C++, MATLAB, Python, LaTeX, Java, Linux, Git, MCU programming, motion planning, closed-loop control

HONORS

Society of Women Engineers Motorola Foundation Scholarship 2025

Alltricity Foundation Scholarship 2025

Harvey Mudd Merit Scholarship 2024 - Present