Beverly Xu

bevxu@g.hmc.edu xu21beve beverly-xu-645b71221 www.beverlyxu.com +1 (408) 384-2020

EDUCATION

Harvey Mudd College | B.S. in Engineering *Expected May 2029*

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; both planners were accepted into the Open Motion Planning Library for public use.

EXPERIENCE

Electrical Engineer, ORBES, Arcadia, CA *September 2026 - Present*

– Architecting four compact PCBAs for the ToF LiDAR and IMU on ORB, a free-flying robotic assistant for ISS crew support.
– Benchmarking LiDARs on custom rig (detection rate, latency, FoV) across fabric, skin, and metal to select on-board LiDAR.
– Writing fault-tolerant firmware that classifies obstacle proximity states and flags invalid data to trigger a safe fail state.

Electrical VP/Mechanical Engineer, Harvey Mudd RoboSub (AUV) Team, Claremont, CA *August 2025 - Present*

– Built the hydrophone (transducer) signal processing circuit for underwater acoustic localization; the circuit amplifies and filters small-amplitude hydrophone signals, then transmits the clean, 25-40 kHz signal to the main signal board (KiCAD, LTSpice).
– Trained a 17-member electrical team on circuit design and PCB layout through personalized learning plans.
– Machined a 2-inch torpedo launcher to within 2% tolerance (Fusion CAM, CNC mill) after validating launcher force distribution and torpedo drag coefficient with SolidWorks FEA and flow simulation.

Software Lead, Mechanical Science and Engineering Robotics Team, Saratoga, CA *August 2021 - June 2025*

– Led 6-person software team to implement PID and sensor fusion; team reached Worlds division finals/semifinals twice.
– Introduced LiveShare to cut onboarding time and merge conflicts, broadened the team's base of code contributors.

RESEARCH

Intern, Analog Circuit Engineering Lab, Claremont, CA *September 2026 - Present*

– Prototyping a "test bug" board (LTSpice, breadboard) to validate a custom electropenetrograph without live insects; emulates floating voltage drop via op-amp adders with independently-controlled series resistance (10^5-10^{10} Ω).

Intern, Lab for Investigations of Local Air Quality, Claremont, CA *September 2025 - Present*

– Designed CO2 indicator costing 80% less than a commercial device, making per-room deployment viable for a dorm study.
– Running 30-participant human-subjects study on whether self-built indicators sustain ventilation habits longer than pre-built.
– Unified 35 PurpleAir and weather sensors on legacy middleware into a live Firebase stream (BASH, IGOR; Pi/Windows).

NSF-funded Researcher, RoboLand Lab @ USC, Los Angeles, CA *May 2026 - August 2026*

– Engineered spring-loaded obstacle field on custom sliders that held up through 100+ repeatable trials; redesigned the caterpillar-inspired robot's leg gearbox to cut gear slack 50%.
– Showed across 100+ MoCap-tracked trials that obstacle spacing and stiffness predict how sensitive traversal success is to gait choice; built the Python/MATLAB analysis pipeline and presented results as a research poster.

Intern, UC Santa Cruz, Hybrid Systems Lab, Santa Cruz, CA *August 2023 - August 2025*

– Cut planning time 84% and raised success rate 5.4× over baseline with 2 new motion planners for hybrid dynamical systems (collision-resilient quadcopter, bouncing ball).
– Authored C++ tests validating motion plans in ROS 2 and packaged a VM image so reviewers could reproduce results.

PROJECTS

Record player with motorized turntable, Claremont, CA *July 2026 - Present*

– Designed power and control board consolidating record identification, audio, lighting, battery charging, and motor control (KiCAD schematic and layout); assembling SMD parts via stencil and reflow.

Analog alarm clock with single motor-actuated hands, Claremont, CA *April 2026 - May 2026*

– Drove second, minute, and hour hands from one motor via custom 1:60:360 SolidWorks gearbox, verified with motion study.

SKILLS

Electrical: Advanced in KiCAD, Intermediate in embedded systems, mixed-signal design, signal processing, circuit simulation, LTSpice, PCB layout, power electronics
Mechanical: Advanced in SolidWorks and 3D printing, Intermediate in NI LabView, machining, OnShape, CAM, DFM
Software: Advanced in C++, closed-loop control systems, Intermediate in SystemVerilog, FPGA Programming, Python, Java, Linux, Git, motion planning