

Zachary Liu

📍 Berkeley, California ✉ zachliu@berkeley.edu ☎ 408-784-1000 🔗 in/zacharywliu 🌐 zachary-liu.com

EDUCATION

University of California - Berkeley • Berkeley, CA
B.S. Mechanical Engineering

December 2025
GPA 3.72/4.0

EXPERIENCE

Tesla - Fremont, CA

Mechanical Design Engineering Intern - Static and Dynamic Sealing

January 2024 - August 2024

- Responsible engineer for 4 dynamic sealing designs for the Gen. 2 Roadster program. Responsible engineer for 1 dynamic seal design on Model Y and 1 static seal design on Cybertruck.
- Created initial cost-down designs/proposals for Model 3 and Model Y bright trims & seals, leading to ~\$80 cost down per vehicle, est. \$12m/year. Decreased part count by 50% (8 parts per vehicle) by designing for roll forming, co-extrusion, and encapsulation vs. previous separate stamping + extrusion processes.
- Drove design meetings with a supplier to develop a PP/TPV primary seal for Model Y, resulting in 44% weight reduction per part and 2.5kg mass down per vehicle.
- Worked with cross functional teams to identify, root cause, contain, and implement long-term solutions for production line issues on Cybertruck GA in Austin.

Bimotal, Inc - Berkeley, CA

Mechanical Design Engineering Intern

May 2023 - August 2023

- Designed and sourced manufacturing for Elevate Dyno V3 to perform End-of-Line testing on Elevate E-bike drive units prior to shipping to customers. Over the previous version: increased disc brake standard compatibility by 400%, decreased time between gear swaps by 600%, improved gear mesh interaction/adjustability, and decreased NVH.
- Personally assembled and tested 12 Elevate drive units for efficiency and NVH.
- Prepared and revised over 15 high-quality engineering drawings. Managed overseas vendors to ensure parts were manufactured as specified.

Bike Builders of Berkeley (BBB) - Berkeley, CA

President

January 2022 - Present

- Led a team of 40 students to design and manufacture custom steel and carbon fiber bicycles using school makerspaces and resources.
- Managed club recruiting via Instagram, LinkedIn, and MailChimp - increased club membership by 30 members in one semester, a 500% increase from the previous year.
- Obtained sponsorship from major components manufacturer worth over \$5000 (in product). Collected over \$600 on GoFundMe to fund future club projects.

PROJECTS

CNC Carbon Fiber Tube Winder

Bike Builders of Berkeley - Berkeley, CA

August 2024 - Present

- Spearheaded a team of 4 in the design and manufacture of a 2-axis CNC carbon fiber filament winder. Organized 3D printing, carbon fiber manufacturing, and CAD workshops; delegated tasks and conducted design reviews.
- Achieved functionality by controlling 3 stepper motors with an Arduino Uno sending GCODE. Created an automatic GCODE generator in based on input parameters.
- Oversaw design/manufacturing of 3D printed mandrels as well as heat formed PVC external molds to ensure smooth surface finish.

Head-Aid Crash Detection Sensor

ME100 (Electronics for IoT) - Berkeley, CA

August 2023 - December 2023

- Developed a helmet-mounted prototype capable of detecting a bicycle crash and sending GPS coordinates to an emergency contact upon impact.
- Achieved functionality by programming an ESP 32 microcontroller using MicroPython and integrating accelerometer readings with a GPS/SIM module.

Custom Bicycle Dropouts

Bike Builders of Berkeley - Berkeley, CA

August 2022 - April 2023

- Developed a custom bicycle dropout design to hold rear wheel, brake caliper, and derailleur (shifting), compatible with SRAM Universal Derailleur Hanger (UDH) and flat mount brake standards to ensure reliable shifting and braking performance.
- Manufactured 1 pair of dropouts using a waterjet and manual milling. Manufactured custom fixtures to secure dropouts while milling.

Modular Hub Spacer

Bike Builders of Berkeley - Berkeley, CA

January 2022 - May 2022

- Eliminated warping during the bicycle frame welding process with a modular spacer to ensure reliable/repeatable rear wheel spacing and alignment.
- Modular endcaps ensure compatibility with all existing rear axle standards (5mm x 130mm QR, 12mm x 142mm TA, etc.) as well as any future standards.

INVOLVEMENT

Berkeley Engineers and Mentors (BEAM) - Berkeley, CA

Logistics Committee, Student Mentor

January 2023 - Present

- In a team of five, transformed STEM curriculum into engaging activities to expose children in under-served communities to hands-on STEM education.
- Coordinated weekly lesson delivery to classrooms of 20+ elementary school students as well as team bonding activities.
- Managed the purchasing, organization, and preparation of lesson materials for 600+ students weekly.

SKILLS

Design: CAD (Fusion 360, SolidWorks, CATIA V5/V6/3DX), PLM (Enovia/3DX), Engineering Drawings, GD&T, Design for Manufacturing, Design for Assembly

Fabrication: 3D Printing, Laser Cutting, Machining, CFRP Manufacturing, TIG Welding, Soldering, Supplier Communication