

# Eric H. Balch

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## EDUCATION

### University of California, Los Angeles

Bachelor of Science in Mechanical Engineering

Graduation June 2028

GPA 3.98/4.0

### Mountain View High School, Mountain View, CA

Honors Diploma

Graduation June 2024

GPA 4.7/4.0

## PROFESSIONAL EXPERIENCE

### Undergraduate Researcher, UCLA Bionics Laboratory

November 2025–present

- Design (SolidWorks) endoscope with independently controlled camera and surgical accessories to improve polyp resection and ease of use
- Focus on the proximal component of the project, creating the housing and operational mechanism for the accessory attachment point

### Bioengineering Intern, Stanford University

June–Sept 2023

#### Cardiovascular Biomechanics Computation Lab

- Conduct modeling (segmentation, model building, meshing) for computational fluid dynamics (CFD) simulations to understand coronary artery disease and physiology
- Model pipeline for cardiovascular anatomic models of patient-specific coronary bypass procedures (e.g., grafts) to analyze changing hemodynamics of different attachment locations
- Create all segmentations and run CFD simulations to evaluate standard graft with resistor and complex boundary conditions (e.g., coronary BCs) to consider the effects of multiple stenoses

### Lifeguard and Swim Instructor, City of Mountain View

June 2021–Sept 2025

- Head Guard leadership role supervising a staff of up to 5 lifeguards, CPR & water rescue certified
- Teach swimming skills, both water safety and stroke mechanics, for all ages children to adults

## RELEVANT PROJECTS

### Responsible Engineer for Bruin Formula SAE Racing Drivetrain Team

June 2025–present

- Design (SolidWorks) front/rear sprockets and motor shaft w/ Design-for-Manufacture (DFM) emphasis
- Iteratively FEA-test (ANSYS Workbench) part geometry to optimize slotting & reduce weight by >10% while withstanding extreme mechanical stress
- Develop GD&T drawings for outsourcing component manufacturing to local sponsors
- Create and execute (F360 CAM) CNC toolpaths for manufacturing of motor shaft and motor mounts, reducing manufacturing costs by >25%

### Responsible Engineer for Bruin Formula SAE Racing New Member Project

Sept 2024–June 2025

- Designed (SolidWorks) assembly to stress test motor-to-sprocket chain (Up to 4500 N)
- FEA-tested (ANSYS Workbench) hook geometry strength; confirmed with manual calculations

### Team Lead & Lead Designer of complex projects for Engineering Lab course

Sept 2022–June 2024

- Designed and built winning wireless car parking lot sensors & display for CTE Capstone project
- Designed and built winning robots for two Vex Robotics timed competitive challenges
- Designed and built hydraulic arm to perform timed competitive precision challenges
- Coordinated team member contributions and presented product design results to class

## LEADERSHIP & EXTRACURRICULARS

- Bruin Formula Racing Team leadership team, Formula SAE competition (2024–present)
- Tau Beta Pi honor society tutor (2025 – Present)
- Silicon Valley Bike Exchange bike mechanic, repairing used bicycles for donation (2018–2024)

## SKILLS

- **Software:** SolidWorks, Fusion 360, ANSYS, MATLAB, MS Office, Gemini, Java, Python
- **Machines:** Drill Press, Band Saw, 3D Printer, Lathe, Mill (CNC & manual)