



PORTFOLIO

# Caiya Coggshall

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## EDUCATION

### Harvey Mudd College, Claremont, CA

Bachelor of Science in Engineering , Specialization: Mechanical, Manufacturing

Good Standing: Fall 2022 - Present , Dean's List: Spring 2024 - Present

Relevant Coursework: Design/Manufacturing Engineering, Continuum Mechanics, Mechanical Design\*, Microprocessor Design/Applications, Biomedical Engineering, Digital Electrical & Computer Engineering (\* In Progress)

GPA: 3.52, Expected May 2026

## WORK EXPERIENCE

### CBM Lifemotion, Claremont, CA, Spring Team Lead

August 2025 - Current

- End-to-end design and rapid iteration of an electromechanical device for enhancing Extracorporeal Membrane Oxygenator (ECMO) cannulation efficiency
- Future work includes architecting system interfaces for the upcoming computer/electrical proof-of-concept: defined power/signal/data specs, selected sensors/actuators/MCU, and the bring-up & testing plan

### E2 - Endovascular Engineering, Menlo Park CA, Manufacturing Engineering Intern

May 2025 - August 2025

- Designed and fabricated custom test fixtures, including a proof load tester and a 5-part assembly for a shear test study, using SolidWorks (CAD), 3D printing, and shop equipment to support validation of a Class III biomedical device
- Created detailed SolidWorks models and manufacturing drawings for production tooling, material documentation, and a protective transport case, improving assembly efficiency and enabling safe device demonstration at conferences
- Collaborated with R&D and Quality teams to develop test methods, conduct V&V and blood quality assessments (e.g. Piccolo testing), and update critical documentation (LHRs, MPIs)

### Indomo Injector (Rick Bente), Claremont, CA, Mechanical Subteam Lead

August 2024 - December 2024

- Designed, prototyped, delivered a novel mechanical autoinjector for acne treatment, optimizing dosage accuracy
- Utilized CAD/3D printing to model 30+ prototypes, optimize the activation, needle cap, and skin sensor subsystems
- Refined designs within 3 months, balancing trade-offs against objectives and constraints, improving project outcomes

### Harvey Mudd Machine Shop, Claremont, CA, Machine Shop Proctor

August 2024 - Current

- Instructed advanced manufacturing techniques including precision lathe operation, CNC milling, and hammer fabrication
- Trained and supervised safety and technical training for 100+ engineering students in metal and wood machine shop

### Microfluidics and Biomaterials Lab (Steven Santana), Claremont, CA, Student Researcher

August 2023 - December 2024

- Operated cell culture facility with 70+ flasks, optimizing conditions to reduce variability and accelerate timelines
- Led SOP design for key equipment (e.g. Nanosight NS300), boosting reproducibility in nanoparticle analysis
- Facilitated cross-functional work that improved drug release methods and increased efficiency by 70%

### Promab Biotechnologies, Richmond, CA, Research Intern

May 2023 - August 2023

- Streamlined protein purification, western blotting, and antibody staining protocols for sensor technology
- Managed 10+ cell lines, optimizing growth and preparation using engineering controls
- Used ELISA, FACS, and RTCA to support analytical tool development and cancer cell research

## LEADERSHIP EXPERIENCE

### Harvey Mudd Admissions Office, Claremont, CA, External Operations Coordinator & Tour Guide

February 2023 - Current

- Developed engaging training materials that improved knowledge retention among new tour guides; 97% satisfaction rate showcasing key aspects of the university experience
- Enhanced prospective student engagement by conducting over 5 tours monthly, showcasing unique academic experiences
- Strengthened external partnerships by collaborating with community organizations, leading to improved outreach

### Student Senate Representative, Claremont, CA, South Dorm President

August 2023 - Current

- Elected to represent South Hall at leadership meetings, addressing \$400,000 of budget and for school-wide concerns
- Helped support over 50 organizations and managed community-building events, such as jousting and karaoke, enhancing resident engagement and satisfaction through inclusive planning within the academic year

## SKILLS

**Machine/Precision Tools:** CNC Mills, Lathes, 3D Printing (Bambu Studio, UltiMaker Cura, PrusaSlicer), Oscilloscope, Table Saw, Miter Saw, Piccolo Xpress, CNC Router, Nanosight 300, Laser Cutter (FSL PS48), Panel Saw, Bandsaws, Router Table, Planer, Jointer, Sanding/Power Tools, Soldering

**Tools:** 3D Computer-Aided Design (SOLIDWORKS), SEGGER, Excel, Arduino, LaTex, Sheets, Godot

**Programming:** MATLAB, Python, System Verilog, C, Java, GDScript