

Aaron Li

aaronli3@stanford.edu | [linkedin.com/in/aaron-li-15765027b/](https://www.linkedin.com/in/aaron-li-15765027b/) | aaronli03.notion.site | (916) 873-3509

Education

Stanford University

Sept. 2025 – June. 2027

Master of Science: Mechanical Engineering

Relevant Coursework: ME218 Smart Product Design Fundamentals, ME203 Design and Manufacturing

University of California, Los Angeles

Sept. 2021 – Mar. 2025

Bachelor of Science: Bioengineering

GPA: 3.95/4.0

Relevant Coursework: Statics and Strengths of Materials, Dynamics of Particles and Rigid Bodies, Bioengineering Laboratory, Introduction to Computer Science I & II (C++), Electrical and Electronic Circuits, Physiology and Human Biology, Orthopedic Biomechanical Engineering, Biomedical Transducers, Intro to Biomedical Imaging, Principles of Biocompatibility, Machine Learning and Modeling in Bioengineering

Research Experience

Undergraduate Researcher

Mar. 2024 – May 2025

Center for Advanced Surgical & Interventional Technology at UCLA - Los Angeles, CA

Advisor: Dr. Rory Geoghegan

- Creating haptic sensors for da Vinci robotic surgical system with fiber Bragg grating (FBG) sensing to evaluate tissue stiffness
- Developed method to measure angle of grasping from robotic forceps using optical encoders
- Fabricated benchtop experimentation method using servo motors and 3D-printed mounts
- Manipulated da Vinci robotic surgical system for compatibility with customized surgical forceps
- Fabricated Ecoflex tissue phantoms to evaluate sensor effectiveness in differentiating tissue moduli
- Conducted trials to evaluate human palpation effectiveness in assessing tissue stiffness

Bioengineering Capstone Project Researcher

Sept. 2024 – Mar. 2025

Magnetic Resonance Research Labs - Los Angeles, CA

Advisor: Dr. Holden Wu

- Building deep learning models to segment quantitative double echo steady-state (qDESS) knee MRIs based on tissue utilizing PyTorch
- Comparing models such as U-Net, Attention U-Net, and R2U-Net to optimize segmentation results
- Evaluating segmented MRI images with quantitative T2 maps to discover pathological conditions within knee cartilage

Undergraduate Researcher

Oct. 2022 – Oct. 2024

Bioelectronics Research Group - Los Angeles, CA

Advisor: Dr. Jun Chen

- Investigated applications of soft and liquid magnetoelastic generators (MEGs) for non-invasive health monitoring such as feedback for prosthetics, voice recognition, and ambulatory cardiac monitoring
- Fabricated MEG sensors using PDMS with NdFeB nanomagnets and evaluated output performance
- Developed Python script to customize 3D-printing G-code for fabrication of sensors in textile pattern
- Built flexible PCB with hall sensors to detect magnetic flux variation within MEG sensors
- Collaborated with researchers to review and write scientific manuscripts and present findings at conferences through oral and poster presentations

Industry Experience

R&D Electrical Engineering Systems Intern

Jun. 2024 – Aug. 2024

Shockwave Medical (Johnson & Johnson MedTech) – Santa Clara, CA

- Implemented product testing for Class II & III medical device within Product Development Process
- Executed device qualification for Verification & Validation testing through failure analysis of prototype builds
- Implemented automated defect management analysis tool for device requirements using Python, reducing workload by 50%
- Developed catheter fluid flow model for pressure analysis using SOLIDWORKS and SimScale

Projects

SomniGuard: Smart Sleeping Mask – Design Team

Oct. 2024 – Jun. 2025

Biomedical Engineering Society - Los Angeles, CA

- Integrating sensors for heart rate, movement, temperature, pressure, etc. with ESP32 microcontroller to measure sleep biometrics and transmit data over Wi-Fi to Amazon Web Services (AWS) server

Brain-Controlled Prosthetic Arm – Design Team

Oct. 2023 – Jun. 2024

Biomedical Engineering Society - Los Angeles, CA

- Led sub-team in developing servo motor circuit controlled by Arduino and PWM driver to induce actuation in prosthetic fingers
- Assembled prosthetic arm using 3D-printed CAD models and fishing wire

Pulse Oximeter Project – Build Team

Oct. 2022 – Jun. 2023

Biomedical Engineering Society - Los Angeles, CA

- Constructed a pulse sensing circuit utilizing Arduino microcontroller, LEDs, filters, and amplifiers
- Designed and soldered printed circuit board with Autodesk EAGLE
- Developed web application with Processing to process and display real-time pulse waveform
- Constructed Poke ball-shaped casing to hold electrical components using Autodesk Fusion 360

Effect of Different Salt Concentrations on 3D Encapsulated Cells

Jun. 2023

UCLA Bioengineering Laboratory Course 167L Final Project - Los Angeles, CA

- Investigated effect of placing PC-9 cells encapsulated in alginate beads within hypertonic solutions ranging from 0% to 20% salt concentrations using techniques such as live/dead staining assay

Smart Sleep Mask for Alzheimer's Therapy

Apr. 2023

BMES BioHack Hackathon Project - Los Angeles, CA

Earned First Prize Award

- Researched wearable methods of sleep therapy for Alzheimer's patients
- Designed circuit for eye pressure sensing using strain gauge and sound therapy using piezo buzzer
- Prototyped mask model using CAD design with Autodesk Fusion 360

Study Website for Organic Chemistry Reactions Project

Mar. 2023

Personal Study Tool Project - Los Angeles, CA

- Designed and coded a website using React that provided students in course, Chem 14D: Organic Reactions and Pharmaceuticals, with a study tool for learning and memorizing reactions

ACM HOTH X Hackathon Project - Los Angeles, CA

Earned Best Beginner Project Award

- Designed an app that provides handicapped-accessible paths for disabled students using React Native

Publications

1. Zhao, X., Zhou, Y., **Li, A.**, Xu, J., Karjagi, S., Hahm, E., Rulloda, L., Li, J., Hollister, J., Kavehpour, P., and Chen, J., “A self-filtering liquid acoustic sensor for voice recognition.” *Nature Electronics*, 7: 924–932, 2024. <https://doi.org/10.1038/s41928-024-01196-y>
2. Zhao, X., Zhou, Y., Kwak, W., **Li, A.**, Wang, S., Dallenger, M., Chen, S., Zhang, Y., Lium, A., and Chen, J., “A reconfigurable and conformal liquid sensor for ambulatory cardiac monitoring.” *Nature Communications*, 15: 8492, 2024. <https://doi.org/10.1038/s41467-024-52462-8>
3. Yang, Z., Yang, Y., Shen, J., **Li, A.**, Qu, X., Lai, Z., Ji, L., Chen, J., and Cheng, J., “Load-suspended power backpack for labor saving and energy harvesting from human walk.” *Nano Energy*, 121: 109190, 2024. <https://doi.org/10.1016/j.nanoen.2023.109190>

Presentations

Oral Presentations

1. **Li, A.**, Zhao, X., Hahm, E., and Chen, J., “A Textile-Based Haptic Interface for Closed Loop Control of Prosthetics” *UCLA Undergraduate Research Week*, 2023.

Poster Presentations

1. **Li, A.**, Bhat, A., To, N., Sun, S., and Geoghegan, R., “Characterizing Robotic Surgery Instrument Kinematics When Under Human Control” *UCLA Bioengineering Research Day*, 2024.
2. Sun, S., Bhat, A., **Li, A.**, Benharash, P., Dutson, E., and Geoghegan, R., “Towards a Deep Learning Model for Tissue Classification During Robotic Surgery via Tissue Mechanical Property Assessment” *IEEE EMBC*, 2024.
3. **Li, A.**, Zhao, X., Hahm, E., and Chen, J., “A Textile-Based Haptic Interface for Closed Loop Control of Prosthetics” *University of California Systemwide Bioengineering Symposium*, 2023.

Teaching & Service Experience

Design Team Project Manager, BMES

Mar. 2024 – Jun. 2025

- Overseeing team of 12 in designing and creating smart sleeping mask device for sleep therapy
- Managing and applying for over \$3000 in funds for purchasing components and software
- Corresponding with faculty and alumni to receive guidance on project progress and timeline

Youths Mentorship Co-Director, China Care Bruins

Sept. 2021 – Jun 2025

- Mentoring international youth adoptees in the LA Area through establishing a close-knit relationship
- Overseeing cultural mentorship between UCLA students and youth adoptees by designing bonding activities, communicating between parents and students, and managing mentee-mentor relations

Course Grader, UCLA Life Sciences Core Education

Oct. 2022 – Apr. 2025

- Led a team of graders in evaluating coding labs for a life sciences mathematics course
- Collaborating with instructors and professors to align grading criteria with course objectives
- Providing guidance and feedback to the grading team, fostering their professional development

Build Team Project Manager, BMES

Mar. 2023 – Jun. 2024

- Guided over 30 students in projects of building a pulse oximeter from scratch
- Taught concepts of coding, circuitry, CAD and PCB design, and soldering through weekly workshops
- Managed funds of over \$1500 to purchase necessary materials for over 7 individual team projects
- Earned *Best Introductory Poster Presentation* at UCLA BMES Technical Projects Symposium

Program Co-Director, O-Chem Tutoring at UCLA

Jan. 2023 – Mar. 2024

- Led a team of volunteer tutors in the development of tutoring worksheets for organic chemistry
- Organized and facilitated workshops to provide supplemental, open access support to students
- Collaborated with faculty members to align tutoring materials with course objectives
- Recruited volunteer tutors by advertising program through email, social media, and in-person announcements

Volunteer, Alternative Breaks

Nov. 2022 – Apr. 2024

- Engaged in a transformative volunteering experience in Seattle and Boston through addressing issues of food insecurity, investigating sustainable food practices, and interacting with local community
- Collaborated with local organizations to gain insights into the challenges faced by food-insecure populations and the policies aimed at achieving food sustainability
- Explored the importance of community-based initiatives and the significance of equitable access to nutritious food, reinforcing commitment to social and environmental advocacy
- Examined regenerative forms of farming in various environments such as urban and coastal

Special Skills and Knowledge

Computer: Autodesk Fusion 360, Arduino IDE, EAGLE, Processing, Microsoft Office, React, PyTorch, SOLIDWORKS, SimScale, PyCharm, Processing, JIRA, Jama, Minitab, Onshape, Adobe Creative Cloud

Programming Languages: C++, Python, JavaScript, MATLAB, HTML

Manufacturing: Foundry, Lathe, Mill, Metal Forming, Welding

Laboratory Techniques: Fluorescence microscopy, contact angle measurements, cell culture, bioconjugation, microcontact printing, BCA assay, MTS assay, 3D encapsulation, live/dead stain assay

Languages: Intermediate in Chinese and Spanish

Personal Interests

National parks, backpacking, bouldering, landscape and food photography, and MMA