

# Alahe Akhavan

 akhavana |  alaheakhavan |  Portfolio |  alahe.akhavan@gmail.com |  (279) 758-1676

## EDUCATION

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**University of California, Berkeley**  
*Bachelor of Science in Mechanical Engineering*

*Berkeley, CA*  
July 2023 – December 2025

**American River College**  
*Mechanical Engineering*

*Sacramento, CA*  
May 2021 – May 2023

## EXPERIENCE

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**Assistive Grasping, Dorsal Grasper, Research Assistant**  
*Embodied Dexterity Group (EDG), Advised by Prof. Hannah Stuart*

May 2024 – Present  
*Berkeley, CA*

- Developed a new version of Dorsal Grasper for C6/C7 SCI, an assistive device to help with object grasping and manipulation.
- Designed both hardware and software via 3D printing, additive manufacturing, PCB design, and sensors.
- Completed human trials, testing this new device with a various participants with different injury levels; currently writing the research paper.

**Assistive Glove For Parkinson's, Mechanical Engineer**  
*Advised by Prof. Grace O'Connell*

August 2024 – July 2025  
*Berkeley, CA*

- Creating a new assistive therapeutic glove to reduce hand tremor for people with conditions such as Parkinson's and genetic hand tremor.
- Currently working on the second version to address user feedback on creating a user-friendly glove that can be use for various tasks.
- Collaborating with a team of engineers, gaining co-design, biomedical device participant interviewing and testing, and research communicating.

**Prosthetic Hand with Dexterous Articulation for Grasping and Manipulation, Research Fellow**  
*Assistive Robotics and Manipulation Lab (ARMLab), Advised by Prof. Monroe Kennedy III*

June 2025 – August 2025  
*Stanford, CA*

- Created a robotic control system for the Inspire Dexterous Robot Hand to perform articulated dexterous manipulation tasks using human feedback via EMG and Gaze.
- Established a communication interference between devices using ROS2 and Python.
- Tested with small objects and grasping types using prerecorded human finger joint motions mapped on the inspire hand from the Rokoko Smartglove, controlled grasp phases using a trained EMG sensor on the forearm.

**Tactile Sensing Control Optimization, Research Assistant**  
*Embodied Dexterity Group (EDG), Advised by Prof. Hannah Stuart*

January 2024 – April 2024  
*Berkeley, CA*

- Optimized the Universal Robot 10 control system for path planning and to reduce oscillations.
- Implemented and tested control strategies using ROS, C++, and python languages.
- Enhanced robotic control workflows with RViz and Gazebo simulations.

## **Multi-robot Collaborative Planning for Package Transportation, Research Fellow** June 2022 – August 2022

*Berkeley Artificial Intelligence Research (BAIR) Lab, Advised by Prof. Claire J. Tomline*

*Berkeley, CA*

- Designed a motion planning control system for a multi-robot research project, using Universal Robot 5 (UR5) and Quadruped Robot to transport packages in a warehouse setting.
- Created over 6 motion stages for multi-robot package delivery tasks with the UR5.
- Worked with Python in ROS, and tested tasks using simulations RViz and Gazebo to see real time motion and map environments.

## **PROJECTS**

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### **Flexible Wearable Garment**

January 2025 – May 2025

*Product Development Research Project*

*Berkeley, CA*

- Worked with a team of Ph.D. engineering students to develop a transformable textile that uses smock patterns to expand over 200% for programmable local and global adaptability to body geometry with tunable structural stability and breathability.
- We presented the design of the dress for pregnant women to potential users who have experienced pregnancy, aiming to collect their feedback on our design.
- Our product shows promise in applications across sportswear, children's clothing, and adjustable fashion accessories, thanks to its versatility and mechanical programmability.

### **Tea Making Machine, Mechanical Engineering Capstone Project** August 2024 – December 2024

*Personal Project*

*Berkeley, CA*

- Worked with a team of engineering students to create a fully functional traditional tea making machine for our capstone project in Mechatronics course.
- Contributed in creating the CAD design for tea dispensing, testing electronics, PCB design, and programming via C++.
- Our team won first place for the electromechanical award.

### **Maze Navigator Robot**

January 2024 – May 2024

*Personal Project*

*Berkeley, CA*

- Designed and implemented an IoT-based path navigation system using a rover robot to autonomously follow maze-like environments while monitoring surroundings.
- Optimized ultrasonic sensor response (Adafruit) for accurate boundary detection.
- Developed a wireless communication system (Wi-Fi) to transmit real-time sensor data, distance measurements, and path duration during navigation.

### **Biomedical Assistive Device for Parkinson's**

September 2023 – February 2024

*mentored by Prof. Hannah Stuart*

*Berkeley, CA*

- Designing a fully co-designed mechanical spoon to reduce hand tremor for people with Parkinson's.
- Material testing and 3D manufacturing; mechanical testing machines; 3D modeling in SolidWorks and Fusion.

### **A\* Pathfinder Navigation in Different Environments**

August 2023 – December 2023

*Mentored by Dr. Jason J. Choi*

*Sacramento, CA*

- Developed an A\* (Astar) path finding algorithm for a Unitree Go1 robot.
- Designed multiple simulated environments to test the algorithm, tested blocks and different path types.
- Improved skills in robotic programming, algorithm design, testing and simulation skills; learned how to utilize ROS and Gazebo.

## PUBLICATIONS

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### Evaluating Supernumerary Dorsal Grasping in the Home for People with C5–C7 Spinal Cord Injury

*Submitted to IEEE/Robotics Conference, 2025.*

Andrew I.W. McPherson, Jungpyo Lee, **Alahe Akhavan**, Hannah S. Stuart.

### Assistive Dorsal Grasper Modifications for In-Home Experiments

*Poster Presentation, SACNAS National Diversity in STEM Conference, 2024.*

**Alahe Akhavan**, Andrew I.W. McPherson, Jungpyo Lee, Hannah S. Stuart.

## SERVICE/LEADERSHIP

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### Undergraduate Mentor

January 2024 – present

- Mentored incoming and transfer students to support their transition into UC Berkeley.
- Introduced mentees to university resources and encouraged participation in networking opportunities.
- Provided guidance on academic decisions while fostering confidence, motivation, and personal growth.

### STEM Mentor and Volunteer

January 2025 – March 2025

- Mentored a group of diverse middle school students for their first scientific research experiment.
- Advocate for STEM through motivating research projects that are designed and completed by students.
- Helped young students gain communication, research, data collection, and analysis skills.

### STEM Outreach

August 2024 – May 2025

- As a member of EDG Lab, partnered with disability organizations and managed information booths in the resource fairs to showcase past projects
- Organized a skill workshop on assistive devices for engineering students to gain manufacturing design, sensor testing, and circuit board design.

### STEM Tutor

January 2022 – May 2023

- At my local community college, assisted people across a range of age groups and learning styles, helping them with STEM courses.
- Helped create workshops and regular check-ins to ensure and encourage student progress.

### Volunteer Tutor

January 2017 – December 2021

- Thought and tutored low-income students of all ages with math and language at a Sunday school.

## MENTORSHIP

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### Current Students

*Jeremiah Avitia, Cristo Alberto Barragan, Gustavo Inga*

September 2025 – present

### Past Students

*Cathy Sheng, Cassie Katherine Ly, Joya Mirabai Stewart, Alicia Wang*

January 2024 – Dec 2024

## CONFERENCES

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**ASME IMECE2024 Conference** Portland, Oregon November 2024

- Poster Presentation: Poster Presentation: Assistive Dorsal Grasper Modifications for In-Home experiments

**SACNAS Conference** Arizona State University, Phoenix, Arizona October 2024

- Poster Presentation: Assistive Dorsal Grasper Modifications for In-Home experiments

**Undergraduate Women in Physics APS** University of California, Santa Cruz December 2022

**Silicon Valley Women in Engineering Conference** Virtual March 2022

## AWARDS

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**AUTODESK Instructables Award for Best Student Project (TremorEz)** September 2025

**The Leadership Award TLA** May 2025

**SACNAS National Diversity in STEM Conference Travel Scholarship** June 2024

**UC Berkeley Mechanical Engineering Departmental Award** August 2023