# Ishaan Gupta

Berkeley, California • ishaan.gupta@berkeley.edu • 1 (818) 482 3957 • ishaangupta04.github.io/projects/

## EDUCATION

**UNIVERSITY OF CALIFORNIA, BERKELEY** Graduation: Dec 2025

- B.S. Mechanical Engineering, B.S. Electrical Engineering Computer Science (EECS)
- **Relevant Coursework:** Manufacturing and Design Communication, Data Structures (CS 61B), Designing Information Devices and Systems (I & II), 3-D Design with SolidWorks, CAD-Advanced Applications, Statistics and Data Science for Engineers, Engineering Mechanics (I & II), Fluid Mechanics, Thermodynamics, Hands on PCB Engineering

## SKILLS

- **Engineering Skills:** CAD/CAM, FEA, Rapid Prototyping, Product Design, GD&T, Design for Manufacturing, Microcontroller Programming, BOM Management
- **Fabrication Skills:** CNC Manufacturing, Manual Mills, Hand Tools, 3-D Printing, Waterjet and Laser Cutting
- **Programming:** C++, MATLAB, Java, Python, pandas, scikitlearn, numpy, matplotlib
- **Software:** Fusion 360, SolidWorks (CAD/CAM/Simulation), Autodesk Inventor, OnShape, Microsoft Office
- **Certifications:** CSWP - Certified SolidWorks Professional

## WORK EXPERIENCE

**Student Research Assistant** Jun 2023 - Present

*A-Lab, Cedar Group, Lawrence Berkeley National Laboratory | Berkeley, CA*

- Aided in developing an autonomous laboratory capable of synthesizing materials for battery applications, utilizing robotics and artificial intelligence. Worked alongside doctoral students under Professor Gerbrand Ceder
- Improved a robot cell handling sample cap dispensing and cap placing to reduce failure rate and reliability from 2% to .01%. Achieved this by making the system passive, reducing the reliance on repeated motor actuation to dispense caps. Used beam-break sensors to detect caps and programmed Aurdinos to run logic and communicate with the larger system.
- Currently developing a cell capable of automatically capping and decapping cap samples by repurposing an Ender 3 3-D printer with custom firmware, and pneumatic SMC robotics grippers for rapid deployment and integration
- Designed the cells to be modular and constructed of either 3-D printable or off-shelf components, allowing for rapid iteration and lowered manufacturing costs and turnaround times.

**Co-founder, President, and Engineering Consultant** Sept 2022 - Present

*Berkeley Engineering Solutions | Berkeley, CA*

- Co-founded a student organization to consult Bay Area startups on mechanical design projects, providing technical support and manpower for projects they lack the bandwidth to complete
- Designed a modular product testing rig, with a focus on UX and modularity, accommodating different testing equipment, testing states, and product variations. Improved on the existing design by allowing for the product to be tested at multiple angles, reducing testing cost by requiring only a single testing rig for a given product
- Consulted a YC22 agri-tech startup on developing a smart oven 1/5 the size of their existing unit to increase their learning rate, allowing for multiple testing configurations to run simultaneously. Managed 5 engineers, maintained our BOM, set timelines using Gantt charts, and manufactured and tested a working prototype within our $1500 budget
- Smart oven was controlled via Arduino, and utilized heat sensors, computer fans, oxygen sensors, and a heating element. A PID control scheme was designed to allow the oven to accurately hit temperature targets and maintain an oxygen level of 12% throughout the entire heating and cooling cycle.

**Mechanical Engineer** Jul 2022 - Dec 2022

*Combat Robotics at Berkeley | Berkeley, CA*

- Re-designed armor panels for Battle Bot GLITCH in Fusion 360 for Discovery Channel Show Battle Bots, with a focus on design for manufacturing and modularity over previous armor design
- Improved design utilized rubber shock isolators and angled water-jet AR-500 steel plates to disperse kinetic energy from heavy impacts and leveraged a modular design to allow for a swappable system that enabled an offensive configuration
- Optimized the design to be comprised of 2D geometries, driving costs down by enabling all components to be water jet
- Collaborated with water jet manufacturing sponsor for production of the armor panels to account for their manufacturing tolerances and worked in the assembly and fabrication of armor panels, grinding armor panels to prep for welding

**Co-founder & Design Lead** Aug 2020 - Jun 2021

*UH-OH Robotics | Los Angeles, CA*

- Led 5 engineers and competed with combat robot AXOLOTL for Season 5 of the Discovery Channel Show Battle Bots
- Rapidly designed, fabricated, assembled, and tested AXOLOTL within a 4-week time frame, the lowest out of any competing robot, and with the 2nd lowest budget out of 64 competing teams
- Created manufacturing drawings and sourced local manufacturers and manufacturing sponsors, reducing the cost of production by 35% and turnaround time to 2 weeks by recongizing key critical features on which to hold tight tolerances.
- Performed FEA in SolidWorks on the weapon system to optimize for weight and instantaneous energy delivery
- Repaired and fabricated parts of AXOLOTL on CNC and Manual machines between matches, creating G-Code files for Tormach 1100MX milling machine and Tormach Slant Pro lathe