Ishaan Gupta

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EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY Graduation: May 2026

- 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, PCB Design
- **Fabrication Skills:** CNC Manufacturing, Manual Mills, Hand Tools, 3-D Printing, Waterjet and Laser Cutting, Soldering
- **Programming:** Java, Python (pandas, sci-kit learn, numpy, matplotlib), C++, MATLAB
- **Software:** SolidWorks (CAD/CAM/Simulation), OnShape, Fusion 360, Microsoft Office, Propel PLM, KiCad
- **Certifications:** CSWP - Certified SolidWorks Professional

WORK EXPERIENCE

Hardware Engineering Intern May 2024 - Present

Triton Medical Robotics, a Division of Neptune Medical | Burlingame, CA

- Aided R&D efforts for the first deep endoluminal flexible robot, building custom actuator and driver assemblies
- Designed manufacturing fixtures and performed tolerance stack analysis on assemblies to determine tolerances bands
- Tasked with initial exploration of over-air transfer of calibration data from instruments to robot. Developed a test platform, prototyped a custom antenna matching PCB, and developed a testing plan to determine the RFID communication protocol, RFID chip, RFID antenna, and integration within robot instrument drivers and instruments

Hardware Engineering Intern Feb 2024 - May 2024

Covariant.ai | Emeryville, CA

- Ran high-stakes investor demos to showcase capabilities of pick and place robots and tested R&D robot cell features
- Assembled electro-pneumatic components and conducted end-of-line testing on vacuum generator assembilies
- Designed filters for end-of-arm gripper tooling to reduce plastic particulates build-up from customer product packaging

Student Research Assistant Jun 2023 - May 2024

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 and post docs 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.
- Fully owned the design, fabrication, and testing of 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, built, and tested a lab safety-compliant 240-volt electrical and pneumatic box.

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 manufacturing sponsor for production of armor panels to account for their manufacturing tolerances

Co-founder & Design Lead Aug 2020 - Jun 2021

UH-OH Robotics | Los Angeles, CA

- Led 5 engineers and competed with Battle Bot 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 shortest out of any competing robot, and with the 2nd lowest budget out of 64 competing teams
- Created manufacturing drawings using GD&T, and sourced local manufacturers and manufacturing sponsors, reducing the cost of production by 35% and turnaround time down to 2 weeks
- Performed FEA in SolidWorks on the weapon system to optimize for weight and instantaneous energy delivery

PROJECTS

Calfit Jan 2024 - May 2024

Hands on PCB Engineering | University of California, Berkeley

- Designed and soldered a 2 layer smartwatch PCB, with an ESP32-Solo microcontroller, heart rate sensor, and MPU-6050
- Designed and validated a lithium ion battery charging and management circuit that allowed for the device to function while being charged. Utilized I2C as the communication protocol and wrote firmware in C++

Co-founder 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
- 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
- The 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.