

Mohona Sen

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EDUCATION

University of California, Los Angeles (UCLA)

Mechanical Engineering B.S. — Aug 2024

SKILLS

Software: CAD (SolidWorks, GrabCAD, CFD), FEA (Ansys, Abaqus), MATLAB, Python, Arduino, QGIS, WaveForms

Manufacturing: 3D Printing, Manual Machining with Lathe and Mill, CNC, Carbon Fiber Layup

Languages: Spanish, Bengali | **Other:** Research, Writing, Presentation, Leadership, Problem-solving, Organization

WORK EXPERIENCE

Parallel Systems — *Vehicle Engineering Intern*

Jul 2023 – Sep 2023

- Performed FEA to validate functionality of calculator used to find margins of safety for lug and clevis assemblies.
- Redesigned gasket and lid geometry of brake controller enclosure to improve compression and seal while reducing manual labor.
- Conducted testing and cost-benefit analysis to develop an in-house strain gauging kit and write DAQ procedural documentation.
- Designed assembly for vehicle's charging port and developed solution for placement and methods of mounting charging harness.
- Tested 6 brake pumps and analyzed output telemetry to validate pressure rating of hydraulic brake pumps.

Boeing Commercial Airplanes — *Flight Operations and Airframe Service Engineering Intern*

Jun 2022 – Aug 2022

- Generated 240 finite element models (FEMs) of aircraft sandwich panels to solve for stress concentration on fuselage damages.
- Retrofitted Excel spreadsheets to track metrics data for revision cycles of Master Minimum Equipment List (MMEL) and Dispatch Deviations Guide (DDG) of 747, 787, 767, and 737 models.
- Standardized inputs/outputs of metrics data in tracking spreadsheets of MMEL and DDG for more efficient and logical logging.
- Audited Service Requests sent to Boeing by airlines and customers regarding MMEL and DDG inquiries/follow-ups.

LEADERSHIP EXPERIENCE

UCLA Baja SAE Racing — *Transmission Cooling Project Engineer*

Sep 2021 – Oct 2023

- Designed and implemented passive and active cooling systems for ECVT (Electronically Continuous Variable Transmission).
- Executed CFD on chassis and ECVT cover to determine optimum passive cooling air intake mounting location, cover inlet/exhaust positions, and material modifications; used conclusions to inform final design used in national SAE competitions.
- Tested temperatures inside ECVT cover on dynamic vehicle and interpreted resulting data to identify hot spots and their causes.
- Transitioned from passive to active cooling by engineering an assembly with small fan and flange secured onto transmission.

UCLA Sustainability Action Research — *Zero Waste Researcher*

Jan 2022 – Dec 2022

- Spearheaded project to develop UI of new Sustainability page on UCLA Mobile application and create educational materials to boost student/staff awareness of environmental topics including UCLA's tri-waste (landfill/recycle/compost) system.
- Conducted visual waste audits throughout 3 buildings at UCLA to record and model data on tri-waste contamination trends.
- Surveyed 120 students, interviewed building managers, and researched UCLA waste policies to identify waste-sorting barriers.

CALPIRG UCLA — *100% Clean Energy by 2030 Campaign Intern, Coalitions Coordinator*

Sep 2020 – Mar 2021

- Managed two interns, coordinated events, and wrote to elected officials and news sources to expand campaign coalition.
- Lobbied State Assemblymembers to promote bills increasing solar access and other clean energy and plastic pollution measures.
- Registered 1,000 youth voters collectively, reached 49,000 students in 2020, and secured 18,000 clean energy petition signatures.
- Administered outreach by designing social media graphics, phone and text banking, and making class announcements.

PROJECTS

Origami Transformer Robot

Jan 2024 – Jun 2024

- Created origami-inspired robot with prototypes evolving through paper modules, CADs, 3D prints, while testing each iteration.
- Aided in component selection/testing including lightweight lithium polymer batteries to optimize for mass and folding efficiency.
- Troubleshooted electronics failures through testing and reconfiguring wiring via soldering and other techniques.
- Achieved three folding configurations (cube, crab, table) and inchworm-like locomotion with PID control within a \$600 budget.

Rocket Engineering

Oct 2021 – Dec 2021

- Designed both high-power and small 3D-printed rockets in OpenRocket and CAD, with focus on fin and body tube proportions.
- Constructed rockets, incorporating 3D printing, carbon fiber layups, machine shop fabrication, circuit design, and soldering.
- Learned and applied fundamental aerospace engineering principles (i.e. optimizing launch velocity, apogee, drag, weight).
- Launched and recovered rockets successfully, reached ~2,800-ft apogee, and evaluated performance against other student teams.

Path-Following Robot Car

Apr 2021 – Jun 2021

- Implemented PID control by programming and debugging car via Arduino to find error (distance between car and path's centers).
- Completed challenge: kept car on curved path with initial offset, turned it 180° at the end, returned it to starting point in 12 sec.
- Calibrated car's sensors and executed sensor fusion by manipulating sensor data in Excel and applying a weighting scheme.
- Ran over 200 tests by varying duty cycle/base motor speed, wheel directions, variable constants, battery voltage, ambient lighting.