# Ivan Kuang

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Portfolio: https://okane12.github.io/IvanK/

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## EDUCATION

*University of California, Berkeley*                    Expected Graduation - **May 2028**

*Mechanical Engineering Undergraduate Student*

**Relevant Coursework:** Python, Solidworks Modeling, Solid Mechanics, Data Science/Machine Learning for Engineers, Electricity and Magnetism, MATLAB

## SKILLS

**Technical/Software Skills:** Solidworks CAD and FEA simulations, Jupyter Notebook, Python Programming, Sketchup modeling, OnShape, Fusion 360, 3D Printing, Matrix Laboratory (MATLAB), Woodworking

**Awards/Certifications**:  ASME 2025 Cadathon 1st Place, SkillUSA Cabinetmaking Gold, 3D PrintSprint Bootcamp

## WORK EXPERIENCE / INVOLVEMENTS

**Undergraduate Researcher | Gu Laboratory**                    **November 2025 - Present**

- Optimized binder jet material printing to develop stronger, more uniform green bodies by systematically varying print speed, roller speed, density, and overfeed through controlled experiments.
- Conducted design-of-experiments on lattice structures to correlate printing parameters with green body integrity, repeatability, and defect formation.
- Generated labeled defect datasets using high-resolution powderbed imaging for powder/binder detection and machine-learning-based defect classification.

**Airframe Engineer | Space Technology and Rocketry**                    **August 2025 - Present**

- Engineered the chassis extension on the Solid Demonstrator rocket, utilizing Onshape CAD and Solidworks FEA, to eliminate a high-stress coupler, thereby maximizing the structural Factor of Safety (FOS) and ensuring a high accuracy representation to the primary flight vehicle
- Designed and implemented airframe runners and protection systems to mitigate structural damage to critical components that extended beyond the main airframe

**Chassis Engineer | Cal Solar Racing**                    **September 2024 - Present**

- Employed SolidWorks for CAD modeling to design for simulations, focusing on optimizing vehicle reinforcement for enhanced occupant safety while adhering to race constraints
- Developing composite manufacturing plans for the lower occupancy cell, specifying epoxy application, clamping strategy, joining methodology, and jig/support development to achieve final assembly/structural requirements.

**Research Fellowship | Caltech Seismo Lab Fellowship**                    **March 2023 - August 2023**

- 1 of 12 selected students to participate at Caltech's Seismology Earthquake Fellowship
- Formulated a distinctive magnitude metric with the capacity to accurately forecast earthquakes of up to 4.0 magnitude, leveraging Raspberry Shake Geophones.

## PROJECTS

**Wind Turbine**

- Spearheaded the comprehensive design, finite element analysis (FEA), and advanced additive fabrication (FDM 3D printing) of a high-performance wind turbine system. The iterative optimization process maximized power efficiency and structural rigidity, achieving a peak power coefficient that yielded a 500 mWatt output and producing a 178g tower structure which can sustain a 3500 kg static load with negligible elastic deformation.
- Collaborated with peers in a five-member engineering team, managing the product from conceptual CAD modeling (SolidWorks) under stringent mass, dimensional, and volumetric constraints, through to prototype validation and the successful compilation of a comprehensive report.

**C.A.R.E.**

- Designed a self-maneuvering, autonomous material handling robot (C.A.R.E.) for ISO Class 1-5 cleanroom environments to transport sensitive semiconductor materials (5-50 lbs load capacity) using SolidWorks and Onshape for mechanical design and Solidworks FEA.
- Integrates three core subsystems: a self-stabilizing tray using a 3 DOF kinematic system with stepper motors for vibration minimization, an autonomous drive utilizing Mecanum wheels for omni-directional movement , and a stainless steel robotic arm for automated pick-and-place precision.