Frank (Shuai) Liu

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Education

University of California, Los Angeles
Expected Graduation: Jun 2029

Bachelor of Science in Astrophysics and Mechanical Engineering
Los Angeles, State

Relevant Coursework

- Introduction to Machine Learning
- Computation Modeling and Artificial Intelligence
- Industrial Design
- Advanced Robotics
- Media History (Audit)
- Claude 101 (online)

Experience

UCLA Professor Shapley's Group
Mar. 2026 - Present

Undergraduate Researcher
Los Angeles, CA

- Investigating inconsistencies between the CDM model and recent observational data by exploring theoretical modifications to the standard cosmological framework under faculty supervision.

UCLA Bruin Formula Racing Team
Jun. 2025 - Present

Group Member under Aerodynamics, Powertrain, and Suspension
Los Angeles, CA

- Manufactured carbon fiber aerodynamic components and CADed structural parts including a setup pad and cylindrical battery pack, contributing to the team's 2025 competition build.

Princeton International School of Maths and Science, Physics Lab
Jun. 2023 – Jun. 2025

Researcher guided by Prof.Krik @Rutgers
Princeton, NJ

- Designed and built a 3-meter radio telescope with 4-DOF mechanical support.
- Started from CADing in SolidWorks; progressed into embedded system design, antenna system design, and control system design; and ended with programming and fine tuning with Linux, Python, and Arduino.
- Led a 7 people team through the project cycle, met the timeline, and designed ML based noise cancellation system.
- Gave research report at Cambridge University, King's College in CCIR symposium.

MIT Data-Driven Astronomy Research Group
Jun. 2022 – Oct. 2022

Researcher guided by Prof.Muthukrishna @MIT
Cambridge, MA

- Built and validated regression models on large datasets to identify growth patterns and estimate core parameters, translating complex theory into actionable quantitative insights.
- Use LambdaCDM model to predict the possible universe composition through polynomial fitting hubble constant.
- Practiced Numpy, Scipy, Astropy, Matplotlib, Pandas, and Pytorch for data analysis.

Technical Skills

Computer Science Languages: Python (Numpy, Scipy, Matplotlib, Pandas), Arduino, Java, Matlab, Frameworks (Next.js, Tailwind CSS, Supabase)
Computer Aided Design: Solidworks, Onshape, Fusion360, AutoCAD, Figma, Sketchup
Technologies/Frameworks: Linux, GitHub, Arduino, GNURadio, Software Defined Radio, Nanoscale Electronic Design

Leadership / Extracurricular

Probservatory (astronomy club)
Sep. 2024 – Jun. 2025

President
Princeton Int.School of Maths and Science

- Founded and led a 15+ member student astronomy organization; organized lecture series, observatory visits, and STEM outreach to Princeton University and IAS. Featured on school official media twice in one year.

Princeton Refugee Resettlement Program
Oct. 2023 – Sep. 2025

Active Tutor
Princeton Int.School of Maths and Science

- Taught basic English and Mathematics to refugee students while guiding study-life balance.
- Awarded the most patient tutor for volunteering teaching the youngest kids.