Haley Li

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Education

University of Chicago Aug 2025 – Jun 2029
Bachelor of Science in Computer Science, Minor in Physics *Chicago, IL*

Experience

Undergraduate Researcher Aug 2025 – Present
Human Robotics Interaction Lab, UChicago *Chicago, IL*

- Developed autonomous social robot for long-term study on children's engagement with robots
- Engineered multimodal AI pipeline (speech, vision, LLM) to enable adaptive real-time robot behavior
- Reduced response latency and reliability by 40% for interactions in live study environments

Software Engineering Intern June 2025 – Aug 2025
Topological, YC S25 *San Francisco, CA*

- Contributed to development of physics-based AI foundation models for computer-aided design (CAD) optimization
- Designed dataset of 100+ topologically optimized CAD models under varying design constraints and limitations
- Assisted in model benchmarking using physical requirements, achieving $< 5\%$ compliance error

Research Assistant June 2024 – June 2025
Kerckhoff Marine Laboratory, CalTech *Corona Del Mar, CA*

- Developed Python algorithms for soft robotic arms, improving submersible data collection accuracy by 10%
- Automated monitoring across 7 tanks of 30+ marine species, streamlining ecological experiment workflows
- Designed web resources and analytics dashboards to track community outreach impact for 100+ participants

Projects

Autonomous Aeroponic Garden | *Python, React, CAD, Arduino* 2024

- Designed and fabricated autonomous aeroponic garden as board member of OTAP 501(c)(3)
- Developed resource optimization system, achieving 90% less water use compared to traditional methods
- Utilized Arduino, soil sensors, and computer vision to monitor plant growth

Comparative Dark Matter Models | *Python, R, Git* 2023

- Developed modified Newtonian dynamics (MOND) model as part of COSMOS high program
- Analyzed 175+ galaxy rotation curves with statistical modeling by modifying laws of gravity at low accelerations
- Implemented χ^2/dof fitting to evaluate models, with MOND achieving 75% accuracy at the galactic scale

Leadership & Activities

Activities Coordinator Aug. 2021 - June 2025
Sage Hill School Student Council *Newport Beach, CA*

- Organized school's first girls' flag football annual event with 500+ attendees and CIF team
- Oversaw dance planning committee of 10, hosting quarterly school dances with 150+ attendees
- Collaborated with administration members to increase budget by 50% and created 10 new annual events

Data & Software Lead Oct. 2018 – June 2025
FIRST Robotics Competition Team 3476 *Irvine, CA*

- Built Python data pipelines and scouting dashboards for 60+ users, improving competition performance
- Automated match strategy analysis, improving alliance success rate by 30% at the international competition level
- Managed annual training programs, introducing 100+ new students to programming and engineering
- Directed outreach events, including an annual FIRST LEGO League Qualifier for 200+ K-12 students

Technical Skills

Languages: Python, Java, C++, R, TypeScript, HTML, CSS, JavaScript
Frameworks: React, Node.js, Vite
Libraries: pandas, NumPy, Matplotlib, OpenCV, DL4TO
Developer Tools: Git, VS Code, PyCharm, IntelliJ, Firebase