Leo Huang

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Summary

Robotics researcher working toward humanoid and mobile manipulators that can safely provide physical assistance to people. Currently focused on rapid, measurable adaptation, teaching robots resourceful, creative problem solving, and whole-body dexterous manipulation with safe learning-based control.

Education

University of California, Berkeley **May 2025**
Master of Science in Electrical Engineering & Computer Sciences GPA: 3.94/4.0
University of California, Berkeley **May 2024**
Bachelor of Science in Bioengineering GPA: 3.71/4.0
Bachelor of Science in Electrical Engineering & Computer Sciences
Coursework: Linear System Theory, Nonlinear Systems, Intro to Robotics I & II, Machine Learning, Computer Vision, Artificial Intelligence, Optimization Models, Signals & Systems, Efficient Algorithms, Data Structures

Experience

Sastry Lab | *Robotics Researcher, BAIR (Advisor: Prof. Shankar Sastry)* Sep 2024 - Present

- Designing whole-body control for multiple humanoids carrying a shared rigid payload, extending earlier single-humanoid liquid-transport work in Isaac Lab and Newton.
- Built pick-and-place tools on the Boston Dynamics Spot SDK and the workflow UI for field trials; co-led *Double-T DINER*, a framework that uses a refiner agent to improve these tools in simulation.
- Contributed to DARPA TIAMAT with Profs. Shankar Sastry and Claire Tomlin; co-developed *FARM*, a relational scene graph memory for real-time quadruped object search.
- Previously studied control-based learning and loss functions for tiltrotor UAV and robotic arm dynamics.

Hybrid Robotics Lab | *Researcher (Advisor: Prof. Koushil Sreenath)* Jan 2025 - Jan 2026

- Developed zero-shot object-goal navigation pipelines for embodied agents on quadruped robots using large language and vision-language models, enabling exploration of unseen environments.
- Previously investigated hierarchical RL for collaborative humanoid locomotion and manipulation in Isaac Gym.

Ti Lab | *Graduate Researcher (Advisor: Prof. Grigory Tikhomirov)* May 2023 - May 2025

- Conducted nanoscale research on precision placement of hexagonal DNA origami onto silicon wafer chips, achieving a 4x improvement in single-origami binding yield through tuning of buffer conditions and deposition methods.
- Utilized atomic force microscopy (AFM) to evaluate deposition; developed cleanroom experience in Marvell NanoLab.
- As a CITRIS Workforce Innovation Program intern, optimized DNA origami deposition protocols and demonstrated high-contrast 2×2 tile occupancy on silicon wafers.

KLA (RAPID Team) | *Systems Software Engineering Intern* May 2023 - Sep 2023

- Built and deployed diagnostic database tools (C#/Python/.NET) reducing debug time by 90%.
- Implemented interactive features enabling anomaly correlation analysis for system diagnostics.
- Optimized SQL queries for database application, achieving near 100-fold improvement in execution time.

Berkeley Imaging Systems Laboratory | *Undergraduate Researcher (Advisor: Prof. Steven Conolly)* Jan 2023 - May 2024

- Analyzed superparamagnetic iron oxide particle behavior through amplifier circuit testing and particle synthesis.

Publications

1. Tsai, H.* & **Huang, L.*** & Cantrell, D.* & Harutyunyan, N. & Tsai, H. & Dong, M. & Jo, D. & Tomlin, C. & Sastry, S. S. (2026). *Double-T DINER: Deploying Improvements in New Environments via Refined Tool Transfer. CoRL 2026 - Sim2Real2Field Workshop.*
2. He, S. & **Huang, L.** & Lilja, A. & Huebel, F. & Frey, J. & Pavone, M. & Sastry, S. S. & Malik, J. & Tomlin, C. (2026). *FARM: Find Anything using Relational Spatial Memory*. arXiv preprint arXiv:2606.15476. (Under review)
3. **Huang, L.** (2025). *Precision Placement of DNA Origami onto Patterned Silicon Wafer Surfaces. Master's Thesis*, UC Berkeley EECS Department, Technical Report No. **UCB/EECS-2025-76**.
4. Huynh, Q. & Doyle, O. & Guo, K. & Swamynathan, A. & **Huang, L.** & Garlepp, J. & Dambal, N. & Bryan, J. & Ramdani, S. & Saayujya, C. & Fung, B. & Lu, Y. & Fellows, B. & Sehl, O. & Conolly, S. (2023). *Broadband Untuned Active Cancellation*

and Phase Correction of Direct Feedthrough Interference Enables 100-fold Improved Magnetic Particle Imaging Detection. 10.36227/techrxiv.24309607.v2.

Honors and Awards

DARPA TIAMAT Challenge (Phase 1) - 2nd Place 2026
- As part of a Berkeley-Stanford team, co-developed FARM, a real-time scene graph memory for open-vocabulary relational object search, and built Habitat-Sim and Isaac Sim tooling for sim-to-sim transfer on Spot.

Bee AI Hackathon - 1st Place 2025
Jacobs Institute Innovation Catalysts Ignite Grant - Gazeware BCI 2023
Tau Beta Pi Engineering Honor Society 2021
Dean's List - UC Berkeley College of Engineering Fall 2020, Spring 2023, Spring 2024
Honors to Date - UC Berkeley Fall 2020, Spring 2021

Teaching

UC Berkeley | *EECS Department*
- Graduate Student Instructor - EECS C106A: Introduction to Robotics Aug 2024 - Dec 2024
- Tutor - CS 188: Artificial Intelligence Jun 2023 - Aug 2023
- Lab Tutor - EECS 16A: Designing Information Devices and Systems I Jun 2022 - May 2023
- Academic Intern - CS 61A: Structure and Interpretation of Computer Programs Jun 2022 - Aug 2022

Projects

Project Pigeon (1st Place, Bee AI Hackathon) | Python, YOLO, OWL-ViT, SLAM Apr 2025
- Developed a natural language interface for autonomous drone control using voice commands.
- Integrated open-vocabulary (OWL-ViT) and real-time (YOLO) detection models for adaptive object tracking.
- Designed a PID-based controller for closed-loop flight based on vision feedback for DJI Tello Drone.

Robotic Fluid Manipulation | ROS, Python, OpenCV May 2024
- Developed a physics model for estimating plans to pour precise amounts of fluid using Sawyer Arm and OpenCV.
- Implemented control algorithm by combining vision-based methods and dynamics modeling.

Tactile Property Estimation | ROS, Python, UR5 May 2023
- Developed a planning scheme to estimate different objects' rigidity and move them between two points using Universal Robots UR5 Arm, Robotiq 2F-140 Gripper, and ATI Axia80 Force/Torque Sensor.

Gazeware BCI (NeuroTech @ Berkeley) | Arduino, Python, PyGame, PCB Dec 2023
- Designed novel electrooculography (EOG) signal acquisition headset for eye-to-mouse cursor control from scratch.
- Funded by the Jacobs Institute Innovation Catalysts Ignite Grant.

Leadership & Extracurriculars

Berkeleytime | *Full-Stack Web Developer* Jan 2024 - May 2025
- Developed a GraphQL backend for Berkeley's most popular course catalog (30k+ unique monthly users).
- Managed DevOps with Kubernetes, Gitlab, and Cloudflare for CI/CD.
- Developed new features for berkeleytime.com using React and TypeScript.

Taiwanese American Student Association (TASA) at Berkeley | *Internal Vice President* Jan 2022 - May 2022
- Managed communications for 40 internal members.
- Led community events for 150+ general members, raising new-member turnout and retention by 200%.

Army ROTC (Golden Bear Battalion, UC Berkeley) | *Cadet* Aug 2020 - May 2022
- Trained in leadership, field operations, and team coordination.
- Honorable medical disqualification prior to commissioning.

Technical Skills

Programming: Python, ROS2, ROS1, Java, C/C++, C#, Go, SQL, JavaScript
Frameworks: PyTorch, TensorFlow, Isaac Sim/Isaac Lab, Habitat-Sim/Lab, Newton, Flask, React, Node.js
Tools: Git, Docker, Kubernetes, AWS, MATLAB, SciPy, Pandas
Design: Fusion 360, Inventor, PTC Creo, Figma, Adobe Creative Suite
Languages: English, Chinese