Henry Tsai

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Education

University of California, Berkeley Berkeley, CA
Bachelor of Arts. Majors: Computer Science, Data Science, Economics *August 2021 — May 2025*
Honors & Courses: The Leadership Award (merit scholarship), Robotic Manipulation (A+), Robotics (A)

Publications

Double-T DINER: Deploying Improvements in New Environments via Refined Tool Transfer
CoRL 2026 Sim2Real2Field Workshop, CoRL 2026 Late-Breaking Results, under submission
Henry Tsai*, Leo Huang*, Denae Cantrell*, Narek Harutyunyan, Hunter Tsai, Maggie Dong, David Jo, Claire Tomlin, Shankar Sastry

LEGO: Learning to Grasp Anything by Playing with Random Toys
ICLR 2026, arXiv.org/abs/2510.12866
Dantong Niu*, Yuvan Sharma*, Baifeng Shi*, Rachel Ding, Matteo Gioia, Haoru Xue, Henry Tsai, Konstantinos Kallidromitis, Anirudh Pai, Caitlin Regan, Shankar Sastry, Trevor Darrell, Jitendra Malik, Roi Herzig

Research Experience

DARPA TIAMAT GoldenGait Team Supervised by Prof. Shankar Sastry & Prof. Claire Tomlin
Researcher, UC Berkeley *July 2026 — Present*

- Leading a team of 7 students to build a sim2real hill-climbing loop for tool-calling robotic VLM agents
  - Increased Spot quadruped loco-manipulation task success by 50% in Isaac Lab; reproduced same increase in real-world experiments using onboard Qwen3.8-27B inference to call the learned tools
  - Ran paired sign-flip tests across 11,000+ sims to select statistically signficant tool improvements
- Built a Gemini tool-calling agent for a Spot carrying a 6-DoF arm to grasp and transport soft-body objects by autolabeling outdoor scene images for semantic navigation ("Walk to the backpack next to the tent")
  - Designed a Python GUI for conducting and logging Spot experiments with realtime map tracking; halved turnaround time between episodes by automating scene resets via Spot waypoint navigation
- Trained 7 students on Spot operation; configured and documented Spot network access for two campuses

Sastry Group Supervised by Prof. Shankar Sastry & Haoru Xue
Researcher, UC Berkeley *February 2025 — Present*

- Building a novel 2-DoF UMI handheld gripper to enable in-hand object reorientation (twisting bottle caps)
  - Integrating rotary encoders, load cell sensors, depth camera and Meta Quest 3 controller for SLAM
  - Wrote 7-DoF inverse kinematics stack with pose regularization to mimic natural elbow movement
- Designed hand retargeting controllers for the Inspire RH56DFX Dexterous Hands using tactile feedback and joint angle mirroring to improve accessibility for users with hand disabilities such as missing fingers

Darrell Group Supervised by Prof. Trevor Darrell & Dr. Roi Herzig
Undergraduate Researcher, UC Berkeley *April 2025 — December 2025*

- Built a VR teleoperation app on Apple Vision Pro for bimanual manipulation on the Unitree H1 humanoid
- 3D-printed 250 grasp training objects at 50% lower cost than manufacturer quotes in under four weeks

Berkeley Wireless Research Center Supervised by Prof. Vladimir Stojanovic
Undergraduate Researcher (Student Assistant IV, 50% appointment) *February 2023 — May 2024*

- Wrote a simulation client for a Gymnasium Q-learning environment to optimize analog circuit layouts

Industry Experience

Google Sunnyvale, CA
Software Engineer *June 2025 — Present*
Building hardware models in QEMU for validating USB and NVMe controllers on multi-node Cloud TPU servers