



Alan (Jialiang) Zhao




+1 (510) 561-9205 | alanzhaojl@gmail.com | <https://alanz.info/>

 [LinkedIn](#) |  [GitHub](#) |

Palo Alto, CA, U.S.

Full-stack roboticist specialized in multi-modal and multi-embodiment robot learning.

EXPERIENCE

- **1X Technologies**  Feb 2025 - now
Palo Alto, CA
Research Engineer, Robot Learning
 - System 1 & 2 for knowledge transfer and behavior cloning.
 - Design and train streaming LLMs for human-robot interactions.
 - Train humanoid robot to be a good companion.
- **Toyota Research Institute**  May 2024 - Aug 2024
Cambridge, MA
Research Intern, Large Behavior Models
 - Design and build multi-modal sensors for robotic perception.
 - Developed foundational models for multi-modal dexterous robot manipulation.
- **Nuro Inc.**  Jan 2021 - Jan 2022
Mountain View, CA
Robotics Engineer, Behavior & Planning
 - Behavior and planning for autonomous driving.
 - Maneuvering and recovering.

EDUCATION

- **Massachusetts Institute of Technology** Feb 2022 - Jan 2025
Cambridge, MA
Ph.D in Mechanical Engineering
 - Multi-modal sensor design for robotic perception, and robot learning for dexterous manipulation.
 - *Advisor:* Edward Adelson. *Thesis Committee:* John Leonard, Faez Ahmed, Kaiming He.
- **Carnegie Mellon University** Aug 2018 - May 2020
Pittsburgh, PA
M.S. in Robotics, Research Track
 - Robotic grasping and dexterous manipulation with robot learning.
 - *Advisor:* Oliver Kroemer. *Thesis Committee:* Wenzhen Yuan.
- **University of California, Berkeley** Aug 2017 - May 2018
Berkeley, CA
Visiting student & Undergrad Researcher
 - Mechanical design and system modeling of robotic exoskeletons.
 - *Advisor:* Ruzena Bajcsy
- **Beijing Institute of Technology** Sept 2014 - May 2018
Beijing (China)
B.S. in Automation
 - Specialized in control and mechanical design for robots.

RESEARCH & PUBLICATIONS

- **Dual-Arm Assembly of General Multi-Part Objects via Integrated Planning and Learning.** Submitted to CoRL'25
A general planning and control system for flexible, dual-arm assembly of multi-part objects.
Yunsheng Tian, Joshua Jacob, Yijiang Huang, *Jialiang Zhao*, Edward Li Gu, Pingchuan Ma, Annan Zhang, Farhad Javid, Branden Romero, Sachin Chitta, Shinjiro Sueda, Hui Li, Wojciech Matusik
- **Learning Object Compliance via Young's Modulus from Single Grasps using Camera-Based Tactile Sensors.**
Submitted to IROS'25
Learning to estimate compliance with tactile sensing during dexterous manipulation.
Michael Burgess, *Jialiang Zhao*, Laurence Willemet
- **PolyTouch: A Robust Multi-Modal Tactile Sensor for Contact-rich Manipulation Using Tactile-Diffusion Policies.**
In ICRA'25 **Best Paper Award Winner in Field and Service Robotics**
Combine three modalities on the fingertip to achieve dexterous manipulation (Software + hardware).
Jialiang Zhao, Naveen Kuppaswamy, Siyuan Feng, Benjamin Burchfiel, Edward H Adelson

- **Contact-aware and multi-modal robotic manipulation.** Ph.D Thesis
Massachusetts Institute of Technology
Jialiang Zhao. Advised by Prof. Edward Adelson.
- **Scaling Robot Learning with Heterogeneous Pre-trained Transformers.** In *NeurIPS'24* **Spotlight**
A novel architecture for multi-embodiment robot learning pre-training that is modular and scalable.
Lirui Wang, Xinlei Chen, *Jialiang Zhao*, Kaiming He, Russ Tedrake
- **Transferable Tactile Transformers for Representation Learning Across Diverse Sensors and Tasks.** In *CoRL'24*
A foundational architecture and dataset for tactile learning in robot manipulation.
Jialiang Zhao, Yuxiang Ma, Lirui Wang, Edward H Adelson
- **GelLink: A Compact Multi-phalanx Finger with Vision-based Tactile Sensing and Proprioception.** In *ICRA'24*
A novel articulated tactile finger design that only requires one camera for tactile sensing.
Yuxiang Ma, *Jialiang Zhao*, Edward H Adelson
- **PoCo: Policy composition from and for heterogeneous robot learning.** In *RSS'24*
A new fomulation for diffusion policies that can naturally be extended to multi-task, multi-embodiment settings.
Lirui Wang, *Jialiang Zhao*, Yilun Du, Edward H Adelson, Russ Tedrake
- **Gelsight Svelte: A human finger-shaped single-camera tactile robot finger with large sensing coverage and proprioceptive sensing.** In *IROS'23* **Best Overall Paper Award Finalist**
Think outside of the “box”: an optical design that unlocked the door of putting high-res tactile sensing in non-rectangular form factors.
Jialiang Zhao and Edward H Adelson
- **GelSight Svelte Hand: A Three-finger, Two-DoF, Tactile-rich, Low-cost Robot Hand for Dexterous Manipulation.** In *IROS-RoboTac'23*
A novel robot hand configuration that is dexterous and tactile-rich.
Jialiang Zhao and Edward H Adelson
- **FingerSLAM: Closed-loop Unknown Object Localization and Reconstruction from Visuo-tactile Feedback.** In *ICRA'23*
Localizing and reconstructing unknown in-hand objects from vision and tactile with factor grasp-based optimization.
Jialiang Zhao, Maria Bauza, Edward H Adelson
- **Causal Reasoning in Simulation for Structure and Transfer Learning of Robot Manipulation Policies.** In *ICRA'21*
Improve data efficiency in RL by reducing observation and action spaces through causal reasoning.
Tabitha E Lee, *Jialiang Zhao*, Amrita S Sawhney, Siddharth Girdhar, Oliver Kroemer
- **Learning to Plan Precise and Task-oriented Grasps for Autonomous Robotic Assembly.** Master Thesis
Carnegie Mellon University
Jialiang Zhao. Advised by Prof. Oliver Kroemer.
- **Towards robotic assembly by predicting robust, precise and task-oriented grasps.** In *CoRL'20*
Improve precision during different types of robotic assembly tasks with probabilistic grasp planning.
Jialiang Zhao, Daniel Troniak, Oliver Kroemer
- **Learning to compose hierarchical object-centric controllers for robotic manipulation.** In *CoRL'20* **Plenary Presentation**
Improve data efficiency in RL by devising and composing hierarchical controllers.
Mohit Sharma, Jacky Liang, *Jialiang Zhao*, Alex LaGrassa, Oliver Kroemer
- **Toward precise robotic grasping by probabilistic post-grasp displacement estimation.** In *FSR'19*
Improve grasping precision by estimating a probabilistic distribution for post-grasp object displacements.
Jialiang Zhao, Jacky Liang, Oliver Kroemer
- **Introduction and initial exploration to an automatic tennis ball collecting machine.** In *ECMR'17*
Jialiang Zhao, Hongbin Ma, Jiahui Shi, Yunxuan Liu
- **Web-based human robot interaction via live video streaming and voice.** In *ICIRA'17*
Jiahui Shi, Hongbin Ma, *Jialiang Zhao*, Yunxuan Liu
- **Annotation and detection of emotion in text-based dialogue systems with CNN.** arXiv preprint arXiv:1710.00987
Jialiang Zhao, Qi Gao

SKILLS

- **Programming Languages:** Python, C++, Rust
- **Machine Learning:** PyTorch, Torch Titan, Lightning
- **CAD:** Solidworks, OnShape, Fusion

SERVICES

- **Conference Reviewer**
ICRA, IROS, RSS, NeurIPS, CoRL, CASE
- **Journal Reviewer:**
RA-L, T-RO, Sensors
- **Invited Talks:**
 - (2025/01) **NVIDIA Tech Talk:** "Contact-aware and multi-modal robotic manipulation"
 - (2024/12) **Meta Tech Talk:** "Contact-aware and multi-modal robotic manipulation"
 - (2024/10) **MIT & TRI Joint Seminar:** "Multi-modal sensing"
 - (2024/08) **Toyota Research Institute Seminar:** "Tactile sensing for dexterous manipulation"
 - (2024/04) **MIT CSAIL Alliances Workshop** "Multi-modal robotic manipulation"
 - (2024/01) **MIT Embodied AI Seminar** "Multi-modal robotic manipulation"
 - (2023/06) **MIT MechE Seminar** "Multi-modal robotic manipulation"