

YUSEN LUO

☎ (+1) 323 687 7695 ✉ yusenluo@usc.edu Γ Google Scholar X @yusen_2001 🌐 Homepage

EDUCATION

University of Southern California

Master in Computer Science

Sep 2023 - May 2025

Los Angeles, US

Beijing Jiaotong University

Bachelor in Computer Science

Sep 2019 - May 2023

Beijing, CN

RESEARCH INTEREST

My research focuses on enabling robots to efficiently learn and adapt to new tasks with minimal supervision. I am interested in extracting rich world representations from foundation models and grounding them through real-world robot interactions to achieve rapid task acquisition across diverse environments. My goal is to develop methods that enable robots to achieve broad generalization and robust performance across diverse real-world tasks and environments.

PUBLICATIONS & PREPRINTS

- Chancharik Mitra*, **Yusen Luo***, Raj Saravanan*, Dantong Niu, Anirudh Pai, Jesse Thomason, Trevor Darrell, Abrar Anwar, Deva Ramanan, Roei Herzig. “Robotic Steering: Mechanistic Fine-tuning for Vision-Language-Action Models”, *In submission, 2026*.
- Jiahui Zhang*, **Yusen Luo***, Abrar Anwar*, Sumedh Anand Sontakke, Joseph J. Lim, Jesse Thomason, Erdem Biyik, and Jesse Zhang. “ReWiND: Language-Guided Rewards Teach Robot Policies without New Demonstrations”, *Oral Presentation at CoRL, 2025*.

* Indicates Equal contribution.

RESEARCH EXPERIENCE

Berkeley Artificial Intelligence Research (BAIR)

May 2025- Current

Advisor: *Roei Herzig, Prof. Trevor Darrell*

Co-leading project: Robotic Steering: Mechanistic Finetuning for Vision-Language-Action Models

- Developed a mechanistic fine-tuning approach that selectively adapts attention heads in Vision-Language Action models based on task-specific physical, visual, and linguistic requirements
- Demonstrated superior robustness and compute efficiency compared to standard LoRA fine-tuning through comprehensive robot evaluations, enabling faster and more interpretable adaptation of foundation models to diverse robotic tasks.

Learning and Interactive Robot Autonomy Lab

Jan 2024- Current

Advisor: *Prof. Erdem Biyik*

Co-leading project: Latent Action World Modeling

- Developing a framework that jointly pre-trains latent action and world models on action-free videos, fine-tunes both models via online robot interaction to ground latent actions, and leverages learned dynamics for model-based reinforcement learning
- Aiming for RSS 2026

Co-led project: ReWiND: Language-Guided Rewards Teach Robot Policies without New Demonstrations

- Developed a language-conditioned reward model that enables sample-efficient robot learning from minimal demonstrations, eliminating the need for additional per-task supervision.

- Implemented an offline-to-online RL framework that achieved $2\times$ performance improvement in simulation and $5\times$ improvement for real-world bimanual policies within 1 hour of training

AWARDS AND SCHOLARSHIPS

Best Paper Award (ReWiND) , OOD Workshop RSS	<i>June 2025</i>
Best Paper Nomination (ReWiND) , RoboRep Workshop RSS	<i>June 2025</i>
Scholarship for Academic Excellence , Beijing Jiaotong University	<i>Oct 2021</i>