YUSEN LUO

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EDUCATION

University of Southern California *Sep 2023 - May 2025*
Master in Computer Science Los Angeles, US
Beijing Jiaotong University *Sep 2019 - May 2023*
Bachelor in Computer Science 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 developing scalable learning frameworks that leverage foundation models, rich prior knowledge, serving as structured guidance to achieve rapid task acquisition across diverse environments. My goal is to advance autonomous robot learning methods that bridge the gap between foundation models and real-world deployment, moving toward more adaptable and capable robotic systems.

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 Finetuning 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*
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: 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× performance improvement in simulation and 5× improvement for real-world bimanual policies within 1 hour of training

AWARDS AND SCHOLARSHIPS

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