Anthony Liang

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RESEARCH INTERESTS

My research focuses on scalable robot learning, with an emphasis on data-efficient human feedback (gaze, demonstrations, preferences, interventions) and reward foundation models that provide generalizable reward functions across tasks, embodiments, and environments. I also work on core components for embodied intelligence, including vision-language-action models for low-level control, trace models for structured planning, and world models for scene understanding and predictive reasoning. In parallel, I am investigating RL post-training for LLM-based web agents to improve reliability in sequential UI tasks and long-horizon interactions. This line of work parallels robot learning through shared challenges in reinforcement learning and human feedback.

EDUCATION

University of Southern California, Los Angeles, CA — Aug 2021 - Present
Ph.D. in Computer Science (Co-advised by Erdem Bıyık and Stephen Tu) — *GPA: 3.9/4.0*

University of Michigan Rackham Graduate School, Ann Arbor, MI — Aug 2017 - 2021
M.S. in Robotics (Advisor: Honglak Lee) — *GPA: 4.0/4.0*

University of Michigan, Ann Arbor, MI — Aug 2017 - 2021
B.S.E. (Advisor: Honglak Lee) — *GPA: 3.65/4.0*

RESEARCH EXPERIENCE

LiRA Lab and Statistical Learning Lab, USC — Aug 2021 - Present
Ph.D. Student, PI: Erdem Bıyık, Stephen Tu

- Robot learning with multimodal human feedback, sample-efficient RL, learning from unlabelled videos

Intelligent Robot Lab, Carnegie Mellon — May 2020 - May 2021
Visiting Researcher with Changliu Liu

- Hierarchical RL for safe control of autonomous vehicles in dynamic environments

Deep Learning Lab, University of Michigan — Jan 2019 - May 2021
Research Intern with Honglak Lee

- Sample-efficient RL for embodied task learning

PROFESSIONAL EXPERIENCE

Google DeepMind — May 2025 - Sept 2025
Research Intern with Kalpesh Krishna, Jacob Eisenstein — *NYC/Seattle*

- RL post-training for reasoning models

Google Research — May 2023 - Feb 2024
Research Intern with Chih-Wei Hsu, Yinlam Chow, Guy Tennenholtz, Craig Boutilier — *Remote NYC*

- Bayesian RL for Markov Decision Processes with gradually changing latent dynamics
- Data augmentation at critical states for robot imitation learning with Stephen Tu
- Generative modeling for online RL policies

Meta AI - Multimodal Learning Team — May 2022 - Aug 2022
Research Intern with Paul Crook and Andrea Madatto — *Redmond, WA*

- Fine-tuning large language models for task-oriented dialogue generation

Amazon Science — May 2021 - Aug 2021
Applied Science Intern with Thiago Mosquiero — *Seattle, WA*

- Collaborative filtering for recommending new brands and products to consumers

Invisible.ai — May 2020 - Aug 2020
AI Research Intern — *Remote*

- Improving computer vision models for real-time object detection and tracking for industrial processes

Google Ads	May 2019 - Aug 2019
Software Engineering Intern	*Mountain View, CA*
Luminar Technologies	May 2018 - Aug 2018
Software Engineering Intern	*Palo Alto, CA*

PUBLICATIONS

[C7] Mihir Rao*, Anthony Liang*, Abrar Anwar*, Rudy Corona, Giscard Biamby, Dantong Liu, Roei Herzig, Trevor Darrell. "In-Context Learning Trace Model for Robot Learning" *In preparation*

[C6] Matthew Hong*, Anthony Liang*, Kevin Kim, Harshitha Rajaprakash, Jesse Thomason[†], Erdem Bıyık[†], Jesse Zhang[†]. "HAND Me the Data: Fast Robot Adaptation via Hand Path Retrieval" *In submission*

[C5] Jaiv Doshi*, Anthony Liang*, Yigit Korkmaz, Erdem Bıyık. "RHODES: Reducing Human Oversight via Disagreement and Exploration for Safe Reinforcement Learning" *In submission*

[C4] Anthony Liang*, Pavel Czempin*, Matthew Hong, Yutai Zhou, Erdem Bıyık, Stephen Tu. "CLAM: Continuous Latent Action Models for Robot Learning from Unlabeled Demonstrations" *In submission*

[C3] Anthony Liang, Chih-wei Hsu, Yinlam Chow, Guy Tennenholtz, Erdem Bıyık, Craig Boutilier. "DynaMITE-RL: A Dynamics Model for Improved Temporal Meta Reinforcement Learning", *International Conference on Machine Learning (ICML) AutoRL Workshop 2024, Conference on Neural Information Processing Systems (NeurIPS) 2024 (25.8% acceptance)*

[C2] Anthony Liang, Jesse Thomason, Erdem Bıyık. "ViSaRL: Visual Reinforcement Learning Guided By Human Saliency", *Spotlight talk at ICRA Pretraining for Robotics (PT4R) Workshop, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2024*

[C1] Wilka Carvalho, Anthony Liang, Kimin Lee, Sungryull Sohn, Honglak Lee, Richard L. Lewis, Satinder Singh. "Reinforcement Learning for Sparse-Reward Object-Interaction Tasks in a First-person Simulated 3D Environment", *International Joint Conferences on Artificial Intelligence (IJCAI) 2021*

[T5] Anthony Liang, Yigit Korkmaz, Jiahui Zhang, Jesse Zhang, Abrar Anwar, Sidhant Kaushik, Yufei Wang, Yu Xiang, David Held, Dieter Fox, Abhishek Gupta, Stephen Tu, Erdem Biyik. "SPUR: Scaling Reward Learning from Human Demonstrations". *CoRL Eval&Deploy Workshop 2025*

[T4] Anthony Liang, Pavel Czempin, Yutai Zhou, Stephen Tu, Erdem Bıyık. "In-Context Generalization to New Tasks From Unlabeled Observation Data", *ICML In-Context Learning Workshop 2024*

[T3] Ishika Singh, Anthony Liang, Mohit Shridhar, Jesse Thomason. "Self-Supervised 3D Representation Learning for Robotics", *ICRA Pretraining for Robotics (PT4R) 2023*

[T2] Anthony Liang, Ishika Singh, Karl Pertsch, Jesse Thomason. "Transformer Adapters for Robot Learning", *CoRL Workshop on Pretraining for Robot Learning 2022*

[T1] Wilka Carvalho, Anthony Liang, Kimin Lee, Sungryull Sohn, Richard L. Lewis, Satinder Singh, Honglak Lee. "ROMA: A Relational, Object-Model Learning Agent for Sample-Efficient Reinforcement Learning", *ICML Workshop on Object-Oriented Learning 2020*

TEACHING

University of Southern California	
CSCI 699: Robot Learning	Fall 2024
CSCI 499: Natural Language for Interactive AI	Fall 2022

University of Michigan, Ann Arbor	
EECS 442: Computer Vision	Winter 2021
EECS 498: Algorithmic Robotics	Fall 2020
EECS 504: Graduate Computer Vision	Winter 2020
EECS 280: Introduction to Programming and Data Structures	Fall 2018 - Fall 2019
Summer STEM Institute Research Mentor	Summer 2021

HONORS AND AWARDS

- NSF Graduate Research Fellowship Honorable Mention   2020

SERVICES

- ICML 2023, 2024, 2025
- ICLR 2024, 2025
- ICRA 2024, 2025, 2026
- NeurIPS 2022, 2023, 2024, 2025
- HRI 2025
- RA-L
- AAAI 2025
- RO-MAN 2024

STUDENT MENTORSHIP

- Mihir Rao (Undergrad, Berkeley) — Trace VLAs
- Ziyi Liu (Masters) — Preference-based RL
- Sankalp (Sunny) Agrawal (Undergrad, USC SURE Program) — Meta-RL with task descriptors
- Shreya Ramanujam (Undergrad, IIT) — Gaze for robot teleoperation
- Matthew Hong (Masters, USC) — Learning from unlabelled data, RLHF
- Dhanush Kumar Penmetsa (Masters, USC) — Gaze for robot teleoperation
- Jaiv Doshi (Undergrad, USC) — Human-intervention reinforcement learning
- Yixi Quan (Undergrad, USC) — Pretrained Video-LLMs for Robot Learning
- Junu Song (Undergrad, USC CURVE Fellowship) — Real-world robot navigation