Anthony Liang

https://aliang8.github.io ◇ anthony.liang@usc.edu

RESEARCH INTERESTS

My research goal is to build robot systems that are capable of interacting with and assisting humans in performing everyday tasks. Towards this goal, I am working on developing algorithms to leverage different sources of human feedback (e.g. natural language, demonstrations, etc) and inductive biases to enable more efficient learning of complex robot behaviors that align with human preferences. I am also interested in application of generative models to produce multimodal and robust RL policies.

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
Masters in Robotics (Advisor: Honglak Lee) — *GPA: 4.0 / 4.0*

University of Michigan, Ann Arbor, MI — Aug 2017 - 2021
Bachelor of Science in Engineering (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 Research — May 2023 - Aug 2023
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 vison 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

[C6] Anthony Liang*, Robby Costales*, Sankalp Agrawal, Erdem Bıyık, Stefanos Nikolaidis. "VarIMPORT: Task Descriptors for Improved Meta-Reinforcement Learning", *In preparation*

[C5] Jaiv Doshi*, Anthony Liang*, Yigit Korkmaz, Erdem Bıyık. "RHODES: Reducing Human Oversight via Disagreement and Exploration for Safe Reinforcement Learning", *In Submission to ICML 2025*

[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 to ICML 2025*

[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*

[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

Summer STEM Institute Research Mentor — Summer 2021

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

HONORS AND AWARDS

- NSF Graduate Research Fellowship Honorable Mention — 2020

SERVICES

- ICML 2023, 2024, 2025
- ICLR 2024, 2025
- ICRA 2024, 2025
- NeurIPS 2022, 2023, 2024
- HRI 2025

- RA-L
- RO-MAN 2024

STUDENT MENTORSHIP

- 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