

Anthony Liang

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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 <i>Ph.D</i> in Computer Science (Co-advised by Erdem Bıyık and Stephen Tu)	Aug 2021 - Present <i>GPA: 3.9 / 4.0</i>
University of Michigan Rackham Graduate School , Ann Arbor, MI <i>Masters</i> in Robotics (Advisor: Honglak Lee)	Aug 2017 - 2021 <i>GPA: 4.0 / 4.0</i>
University of Michigan , Ann Arbor, MI <i>Bachelor of Science in Engineering</i> (Advisor: Honglak Lee)	Aug 2017 - 2021 <i>GPA: 3.65 / 4.0</i>

RESEARCH EXPERIENCE

LiRA Lab and Statistical Learning Lab , USC <i>Ph.D. Student, PI: Erdem Bıyık, Stephen Tu</i> - Robot learning with multimodal feedback, human-robot collaboration, and sample-efficient RL	Aug 2021 - Present
Intelligent Robot Lab , Carnegie Mellon <i>Visiting Researcher</i> with Changliu Liu - Hierarchical RL for safe control of autonomous vehicles in dynamic environments	May 2020 - May 2021
Deep Learning Lab , University of Michigan <i>Research Intern</i> with Honglak Lee - Sample-efficient RL for embodied task learning	Jan 2019 - May 2021

PROFESSIONAL EXPERIENCE

Google Research <i>Research Intern</i> with Chih-Wei Hsu, Yinlam Chow, Guy Tennenholtz, Craig Boutilier - Bayesian RL for Markov Decision Processes with complex changing latent dynamics - Data augmentation at critical states for robot imitation learning with Stephen Tu - Generative modeling for online RL policies	May 2023 - Aug 2023 <i>Remote NYC</i>
Meta AI - Multimodal Learning Team <i>Research Intern</i> with Paul Crook and Andrea Madatto - Fine-tuning large language models for task-oriented dialogue generation	May 2022 - Aug 2022 <i>Redmond, WA</i>
Amazon Science <i>Applied Science Intern</i> with Thiago Mosquero - Collaborative filtering for recommending new brands and products to consumers	May 2021 - Aug 2021 <i>Seattle, WA</i>
Invisible.ai <i>AI Research Intern</i> - Improving computer vision models for real-time object detection and tracking for industrial processes	May 2020 - Aug 2020 <i>Remote</i>
Google Ads <i>Software Engineering Intern</i>	May 2019 - Aug 2019 <i>Mountain View, CA</i>
Luminar Technologies <i>Software Engineering Intern</i>	May 2018 - Aug 2018 <i>Palo Alto, CA</i>

PUBLICATIONS

- [C3] **Anthony Liang**, Chih-wei Hsu, Yinlam Chow, Guy Tennenholtz, Erdem Biyik, Craig Boutilier. “DynaMITE-RL: A Dynamics Model for Improved Temporal Meta Reinforcement Learning”, *Submitted to NeurIPS 2024, ICML AutoRL Workshop 2024*
- [C2] **Anthony Liang**, Jesse Thomason, Erdem Biyik. “ViSaRL: Visual Reinforcement Learning Guided By Human Saliency”, *International Conference on Intelligent Robots and Systems 2024, Spotlight talk at ICRA Pretraining for Robotics (PT4R) Workshop*
- [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 Biyik. ”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
- ICLR 2024
- ICRA 2024
- NeurIPS 2022, 2023, 2024
- 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
• Dhanush Kumar Penmetsa (Masters, USC)	Gaze for robot teleoperation

- Jaiv Doshi (Undergrad, USC)
- Yixi Quan (Undergrad, USC)
- Junu Song (Undergrad, USC CURVE Fellowship)

Human-intervention reinforcement learning

Pretrained Video-LLMs for Robot Learning

Real-world robot navigation