Jesse Zhang

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Research Interests

I'm a 5th-year PhD candidate interested in deep reinforcement learning (RL) and robotics. I want to enable autonomous, generalist agents via guidance from large pre-trained models. My previous work spans hierarchical, offline, model-based, and skill-based RL, robotic platforms, and program synthesis.

Education

University of Southern California, Los Angeles, CA — 2020 - Present
Ph.D. in Computer Science (Advisors: Erdem Biyik, Joseph Lim, Jesse Thomason) — GPA: 4.00/4.00

UC Berkeley, Berkeley, CA — 2016 - 2020
B.A. in Computer Science (Honors in CS, Graduated w/ Highest Distinction) — GPA: 3.96/4.00

In Submission

[S2] Matthew Hong*, Anthony Liang*, Kevin J. Kim, Harshitha Belagavi Rajaprakash, Jesse Thomason*, Erdem Biyik*, and **Jesse Zhang***. "HAND Me The Data: Fast Robot Adaptation via Hand Path Retrieval", *CoRL*, 2025

[S1] 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", *CoRL*, 2025

Conference Papers

[C13] Yi Li*, Yuquan Deng*, **Jesse Zhang***, Joel Jang, Marius Memmel, Caelan Reed Garrett, Fabio Ramos, Dieter Fox, Anqi Li*, Abhishek Gupta*, and Ankit Goyal*. "HAMSTER: Hierarchical Action Models for Open-World Robot Manipulation", *ICLR*, 2025

[C12] **Jesse Zhang**, Minho Heo, Zuxin Liu, Erdem Biyik, Joseph J Lim, Yao Liu, and Rasool Fakoor. "EXTRACT: Efficient Policy Learning by Extracting Transferable Robot Skills from Offline Data", *CoRL*, 2024

[C11] Yufei Wang, Zhanyi Sun, **Jesse Zhang**, Zhou Xian, Erdem Biyik, David Held, and Zackory Erickson. "RL-VLM-F: Reinforcement Learning from Vision Language Foundation Model Feedback", *ICML*, 2024

[C10] **Jesse Zhang**, Karl Pertsch, Jiahui Zhang, and Joseph J Lim. "SPRINT: Scalable Semantic Policy Pre-training via Language Instruction Relabeling", *ICRA 2024. Spotlight at LangRob Workshop at CoRL 2022*,

[C9] Zuxin Liu, **Jesse Zhang**, Kavosh Asadi, Yao Liu, Ding Zhao, Shoham Sabach, and Rasool Fakoor. "TAIL: Task-Specific Adapters for Imitation Learning", *ICLR*, 2024

[C8] Sumedh Anand Sontakke, **Jesse Zhang**, Séb Arnold, Karl Pertsch, Erdem Biyik, Dorsa Sadigh, Chelsea Finn, and Laurent Itti. "RoboCLIP: One Demonstration is Enough to Learn Robot Policies", *NeurIPS*, 2023

[C7] **Jesse Zhang**, Jiahui Zhang, Karl Pertsch, Ziyi Liu, Xiang Ren, Minsuk Chang, Shao-Hua Sun, and Joseph J Lim. "Bootstrap Your Own Skills: Learning to Solve New Tasks with Large Language Model Guidance", *Oral at CoRL 2023 (top 6.6%). Spotlight at Articulate Robots Workshop at RSS 2023*, 2023

[C6] Dweep Trivedi*, **Jesse Zhang***, Shao-Hua Sun, and Joseph J. Lim. "Learning to Synthesize Programs as Interpretable and Generalizable Policies", *NeurIPS*, 2021

[C5] **Jesse Zhang***, Haonan Yu*, and Wei Xu. "Hierarchical Reinforcement Learning by Discovering Intrinsic Options", *ICLR*, 2021

[C4] Avi Singh, Albert Yu, Jonathan Yang, **Jesse Zhang**, Aviral Kumar, and Sergey Levine. "COG: Connecting New Skills to Past Experience with Offline Reinforcement Learning", *CoRL*, 2020

[C3] **Jesse Zhang**, Brian Cheung, Chelsea Finn, Sergey Levine, and Dinesh Jayaraman. "Cautious Adaptation For Reinforcement Learning in Safety-Critical Settings", *ICML*, 2020

[C2] **Jesse Zhang**, Jack Sullivan, Vasudev Venkatesh PB, Kyle Tse, Andy Yan, John Leyden, Kalyanaraman Shankari, and Randy H Katz. "TripAware: Emotional and Informational Approaches to Encourage Sustainable Transportation via Mobile Applications", *Proceedings of the 6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation*, 2019

[C1] Brian Yang, **Jesse Zhang**, Vitchyr Pong, Sergey Levine, and Dinesh Jayaraman. "REPLAB: A Reproducible Low-Cost Arm Benchmark for Robotic Learning", *ICRA*, 2019

Journal Papers

[J1] **Zhang, Jesse**, Jiangyi Xia, Xin Liu, and John Olichney. "Machine Learning on Visibility Graph Features Discriminates the Cognitive Event-Related Potentials of Patients with Early Alzheimer's Disease from Healthy Aging", *Brain Sciences*, 2023

Preprints and Workshop Papers

[P5] Taewook Nam, Juyong Lee, **Jesse Zhang**, Sung Ju Hwang, Joseph J Lim, and Karl Pertsch. "LiFT: Unsupervised Reinforcement Learning with Foundation Models as Teachers", *2nd Workshop on Agent Learning in Open-Endedness (ALOE) at NeurIPS 2023*, 2023

[P4] Linghan Zhong, Ryan Lindeborg, **Jesse Zhang**, Joseph J Lim, and Shao-Hua Sun. "Hierarchical Neural Program Synthesis", *ArXiv Preprint*, 2023

[P3] **Jesse Zhang***, Karl Pertsch*, Jiefan Yang, and Joseph J Lim. "Minimum Description Length Skills for Accelerated Reinforcement Learning", *ICLR 2021 Self-Supervision for Reinforcement Learning Workshop*, 2021

[P2] Kalyanaraman Shankari, Jonathan Fuerst, Mauricio Fadel Argerich, Eleftherios Avramidis, and **Jesse Zhang**. "MobilityNet: Towards A Public Dataset For Multi-Modal Mobility Research", *ICLR Climate Change AI Workshop 2020*, 2020

[P1] Daiyaan Arfeen* and **Jesse Zhang***. "Unsupervised Projection Networks for Generative Adversarial Networks", *ICCV 2019 Sensing, Understanding, and Synthesizing Humans Workshop*, 2019

Honors and Awards

- Qualcomm Innovation Fellowship Finalist 2024
- Best Paper Runner-up, CoRL LangRob Workshop 2022
- Highlighted Reviewer Award (top 8%), ICLR 2022
- Distinguished Reviewer Award (top 8%), NeurIPS 2021
- Travel Award, ICLR 2020
- Honors in Computer Science, UC Berkeley 2020

Experience

Research Scientist Intern May 2024 - March 2025
NVIDIA Seattle Robotics Lab, Seattle, WA

Applied Scientist Intern June 2023 - November 2023
Amazon Lablets, Santa Clara, CA

Research Intern February 2021 - August 2021
NAVER CLOVA AI Research, Seongnam, Korea

Research Intern January 2020 - August 2020
Horizon Robotics, Cupertino, CA

Undergraduate Researcher January 2019 - August 2020
BAIR: Berkeley Artificial Intelligence Research, Berkeley, CA

Undergraduate Researcher August 2017 - December 2018
RISE Lab, Berkeley, CA

Undergraduate Researcher May 2018 - August 2018
UC Davis Center for Mind and Brain, Davis, CA

Services

Reviewer

- RL Conference (Senior Reviewer), RA-L, ICRA, NeurIPS, ICML, ICLR, CoRL, TMLR, UIST 2024, CHI 2024, IEEE ITSC 2019

Mentoring and Outreach

- **USC UGrad Mentoring Program**: 1:1 meetings to forge paths for getting involved in research.
- **Organizing UROS**: PhD-student-led robotics symposium at USC.
- **CURVE**: Mentoring USC undergrads through fellowship program.
- **Google x USC AI Community Project**: Helping undergrads design AI education outreach programs for underrepresented students in K-12 schools and Los Angeles community events. `https://sites.google.com/usc.edu/aicommunityproject`.

Teaching

Graduate Student Instructor, USC 2020-2025
CSCI-360 Intro to AI; CSCI-566 Deep Learning

- TA'd 5 times in two classes: Intro to AI (undergrad), Deep Learning (graduate), class sizes 200+.

- Held OH, mentored project teams, created quizzes, held in-class discussions, wrote exam questions.

- Median TA rating of 5.0/5.0 every semester I was evaluated, Mean: $\sim$ 4.6/5.

Undergraduate Student Instructor, UC Berkeley Fall 2019
CS 188: Intro to AI (Anca Dragan)

- Lead a discussion section and held office hours — received 4.75/5 rating, 0.42 above dept avg

Course Reader, UC Berkeley Spring 2019
CS 170: Algorithms/Intro to CS Theory (Lucas Trevisan and Prasad Raghavendra)

- Held office hours + volunteered to write problems for and help run extra sections on difficult material.

Research Mentoring

PhD Students

- Abrar Anwar (USC) CoRL 2025 Submission

- Anthony Liang (USC) — CoRL 2025 Submission

USC Masters Students

- Yusen Luo — CoRL 2025 Submission
- Matthew Hong — CoRL 2025 Submission
- Ryan Lindeborg — 2023 Preprint, Current
- Jiahui Zhang — CoRL 2023, ICRA 2024, CoRL 2025 Submission

USC Undergraduate Students

- Jiankun (Richard) Peng — Current
- Kevin Kim — CoRL 2025 Submission
- Jiefan Yang — ICLR Workshop 2021

USC Visiting Scholars

- Sarthak Bhagat — 2020-2021
- Dweep Trivedi — NeurIPS 2021

Invited Talks

"Hierarchical VLAs for Robot Manipulation"

- OpenAI Robotics Reading Group — March 2025

"Scalable robot adaptation with large pre-trained models"

- Google Deepmind Tech Talk Series (Host: Jie Tan) — February 2025
- Yonsei University RLLab (Prof. Youngwoon Lee) — January 2025
- NTU Robot Learning Lab (Prof. Shao-Hua Sun) — December 2024
- 44th Southern California Control Workshop — November 2024

"Robotics in the Context of Large Pre-Trained Models"

- Perception, Action, and Learning Group at UPenn (Prof. Dinesh Jayaraman) — February 2024
- NTU Robot Learning Lab (Prof. Shao-Hua Sun) — October 2023

"Learning to Synthesize Programs as Interpretable and Generalizable Policies"

- AIPlans Workshop at NeurIPS 2021 — December 2021

Selected Press Coverage

[P1] "REPLAB: A low-cost benchmark platform for robotic learning," by Ingrid Fadelli, *Tech Xplore*, May 29, 2019.

Last Update : May 15, 2025