

# Jesse Zhang

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## RESEARCH INTERESTS

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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

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<b>University of Southern California</b> , Los Angeles, CA	2020 - Present
<i>Ph.D.</i> in Computer Science (Advisors: Erdem Biyik, Joseph Lim, Jesse Thomason)	GPA: 4.00/4.00
<b>UC Berkeley</b> , Berkeley, CA	2016 - 2020
<i>B.A.</i> in Computer Science (Highest Distinction)	GPA: 3.96/4.00

## CONFERENCE PAPERS

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- [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**, Minh 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

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- [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

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- [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

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- 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

## INVITED TALKS

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- “Scalable robot adaptation with large pre-trained models”
- Yonsei University RLLab (Prof. Youngwoon Lee) January 2025
- “Scalable robot adaptation with large pre-trained models”
- NTU Robot Learning Lab (Prof. Shao-Hua Sun) December 2024
- “Scalable robot adaptation with large pre-trained models”
- 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
- “Robotics in the Context of Large Pre-Trained Models”
- 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

## EXPERIENCE

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- Research Scientist Intern* May - March 2025  
 NVIDIA Seattle Robotics Lab, Seattle, WA  
 - Working on efficient robot adaptation guided by large pre-trained models (Mentors: Anqi Li, Abhishek Gupta, Fabio Ramos)
- Applied Scientist Intern* June - November 2023  
 Amazon Labete, Santa Clara, CA  
 - Project on automatic robot primitives extraction through skill alignment with large, pre-trained models (Mentors: Rasool Fakoor and Yao Liu)
- Research Intern* February - August 2021  
 NAVER CLOVA AI Research, Seongnam, Korea  
 - Research in robot learning, human-robot interaction, and large language models (Mentor: Minsuk Chang)
- Research Intern* January - August 2020  
 Horizon Robotics, Cupertino, CA  
 - Research in hierarchical RL + unsupervised skill discovery (Mentors: Wei Xu and Haonan Yu)
- Undergraduate Researcher* January 2019 - August 2020  
 BAIR: Berkeley Artificial Intelligence Research, Berkeley, CA  
 - Research in robot learning, model-based RL, offline RL (Advised by Sergey Levine + Dinesh Jayaraman)
- Undergraduate Researcher* May 2018 - August 2018  
 UC Davis Center for Mind and Brain, Davis, CA  
 - Research in graph theory and machine learning for dementia classification (Advised by John Olichney)

## SERVICES

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### Reviewer

- ICRA 2025, ICLR 2025, CoRL 2024, UIST 2024, CHI 2024, RA-L, ICRA 2024, NeurIPS 2021-2024, ICML 2022-2024, ICLR 2021-2025, CoRL 2021-2024, TMLR, IEEE ITSC 2019

### Mentoring and Outreach

- Mentoring undergrads interested in pursuing research with 1:1 meetings to discuss their academic plans.
- Organizing UROS, a PhD-student-led robotics symposium at USC.
- Mentoring for the CURVE undergraduate fellowship for USC undergrads.
- Google x USC AI Community Project: Mentored undergrads in computer science in designing AI education outreach programs for underrepresented students in K-12 schools and Los Angeles community events. <https://sites.google.com/usc.edu/aicomunityproject>.

## TEACHING

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- Graduate Student Instructor, USC* Fall 2024  
CSCI-566 Deep Learning (Yan Liu)  
- Held office hours and mentored project teams, helped create quizzes and held in-class discussions.
- Graduate Student Instructor, USC* Spring 2023  
CSCI-566 Deep Learning (Jesse Thomason)  
- Held office hours and mentored project teams, integrated Gradescope for grading assignments.
- Graduate Student Instructor, USC* Spring 2022  
CSCI-360 Intro to AI (Bistra Dilkina)  
- Held discussion sections, office hours, created homework assignments, wrote exam questions.
- Graduate Student Instructor, USC* Fall 2020  
CSCI-566 Deep Learning and its Applications (Joseph J. Lim)  
- Gave 2 lectures, prepared assignments/exams, held office hours, and mentored 6 final project teams
- Undergraduate Student Instructor, UC Berkeley* Fall 2019  
CS 188: Intro to AI (Anca Dragan)  
- Lead a discussion section and held office hours — received 4.75/5.00 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.

## MENTORING

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### USC Masters Students

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

### USC Undergraduate Students

- Jiankun (Richard) Peng Current
- Christina Wang Current
- Kevin Kim Current
- Jiefan Yang ICLR Workshop 2021

### USC Visiting Scholars

- Sarthak Bhagat 2020-2021
- Dweep Trivedi NeurIPS 2021

## SELECTED PRESS COVERAGE

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

Last Update : February 7, 2025