

JEFFREY WU

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EDUCATION

Columbia University

Sept 2024 –

Ph.D. in Computer Science

University of California, Berkeley

Aug 2023 – May 2024

M.S. in EECS (5th Year Program)

GPA: 4.0/4.0

Relevant Coursework: Natural Language Processing, Statistical Learning Theory

Master's Thesis: *V-Former: Offline RL with Temporally-Extended Actions*

University of California, Berkeley

Aug 2019 – May 2023

B.A. in Computer Science

GPA: 4.0/4.0

Relevant Coursework: Machine Learning, Artificial Intelligence, Deep Neural Networks, Deep Reinforcement Learning, Computer Vision, Probability and Random Processes, Optimization, Digital Signal Processing, Time Series

PUBLICATIONS

Precise and Dexterous Robotic Manipulation via Human-in-the-Loop Reinforcement Learning

Jianlan Luo, Charles Xu, **Jeffrey Wu**, Sergey Levine

Under Review at Science Robotics

Action-Quantized Offline Reinforcement Learning for Robotic Skill Learning

Jianlan Luo, Perry Dong, **Jeffrey Wu**, Aviral Kumar, Xinyang Geng, Sergey Levine

Conference on Robotic Learning (CoRL), 2023

FMB: A Functional Manipulation Benchmark for Generalizable Robotic Learning

Jianlan Luo*, Charles Xu*, Fangchen Liu, Liam Tan, Zipeng Lin, **Jeffrey Wu**, Pieter Abbeel, Sergey Levine

International Journal of Robotics Research (IJRR), 2024

Open X-Embodiment: Robotic Learning Datasets and RT-X Models

Open X-Embodiment Collaboration

IEEE International Conference on Robotics and Automation (ICRA), 2024

RESEARCH EXPERIENCE

Causal Artificial Intelligence Lab

Sept 2024 –

Advised by Prof. Elias Bareinboim

New York, NY

Robotic AI & Learning Lab (RAIL) at BAIR

Feb 2022 – Sept 2024

Advised by Prof. Sergey Levine

Berkeley, CA

Human-in-the-Loop Reinforcement Learning for Robotic Manipulation

(Under Review)

- Presented a human-in-the-loop vision-based RL system that learn near-perfect success rate policies in just 1 to 2.5 hours of training across range of tasks, including dynamic manipulation, precision assembly, and dual-arm coordination tasks
- Surpassed imitation learning baselines and prior RL approaches in success rate, training time, and cycle time

Offline RL with Temporally-Extended Actions

(Master's Thesis)

- Proposed using a transformer-based policy trained with an advantage-weighted sequence modeling objective to predict action chunks to more effectively model multimodal and non-Markovian policies
- Improved performance on Robomimic tasks and outperform prior work on datasets with multiple action frequencies

Action-Quantized Offline Reinforcement Learning

(CoRL 2023)

- Proposed learning state-conditioned action discretization with a VQ-VAE in conjunction with discrete formulations of offline RL methods (BRAC, CQL, IQL) to reduce approximation errors in offline RL constraints and regularizers
- Improved performance up to 2-3x compared to the continuous offline RL counterpart methods in D4RL and Robomimic

FMB: Functional Manipulation Benchmark

(IJRR 2024)

- Provided a benchmark consisting of easily reproducible 3D-printed objects and boards that focus on functional manipulation skills, such as grasping, reorientation, and assembly, with a provided imitation learning framework
- Enabled evaluation of generalization across objects and positions, and offered a testbed for methods for solving complex multi-stage assembly tasks

INDUSTRY EXPERIENCE

Amazon Web Services (AWS)

May 2021 – Aug 2021

Software Development Engineer Intern

East Palo Alto, CA

- Migrated AWS S3 accesses in AWS Redshift from the original in-house library to the official AWS C++ SDK while maintaining existing functionality
- Carried out performance benchmarking and performance analysis

TEACHING

EE122: Introduction to Communication Networks (UC Berkeley)

Teaching Assistant

Spring 2023

- Hosted weekly office hours, led discussion sections, answered student questions on Ed discussion forum, created class materials, graded homeworks and exams

EECS127: Optimization Models in Engineering (UC Berkeley)

Reader/Tutor

Spring 2022, Fall 2022