Homer Walke

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Education

University of California - Berkeley — Berkeley, CA
PhD in Computer Science — *Anticipated Graduation May 2026*

- Advisor: Professor Sergey Levine
- Research Area: Robot Learning

Brown University — Providence, RI
BS in Computer Science with Honors — *May 2021*

- Advisors: Professor Michael Littman, Professor Daniel Ritchie

Research Interests

- Large-scale robot learning: building intelligent embodied agents by leveraging large and diverse datasets of robot behaviors, videos, images, and language.
- Imitation learning, offline and online RL, generative modeling for control.

Research Experience

Graduate Student Researcher — September 2021 – Present
UC Berkeley, Robotic AI and Learning Lab, Professor Sergey Levine

Undergraduate Researcher — June 2020 – May 2021
Brown University, Visual Computing Group, Professor Daniel Ritchie

Undergraduate Researcher — June 2019 – May 2021
Brown University, Robotics Group, Professor Michael Littman

Selected Publications

Scaling Cross-Embodied Learning: One Policy for Manipulation, Navigation, Locomotion and Aviation
Ria Doshi*, Homer Walke*, Oier Mees, Sudeep Dasari, Sergey Levine.
CoRL 2024 Oral | arXiv:2408.11812.

Octo: An Open-Source Generalist Robot Policy
Dibya Ghosh*, Homer Walke*, Karl Pertsch*, Kevin Black*, Oier Mees*, Sudeep Dasari, Joey Hejna, Charles Xu, Jianlan Luo, Tobias Kreiman, You Liang Tan, Dorsa Sadigh, Chelsea Finn, Sergey Levine.
RSS 2024 | arXiv:2405.12213.

BridgeData V2: A Dataset for Robot Learning at Scale
Homer Walke, Kevin Black, Abraham Lee, Moo Jin Kim, Max Du, Chongyi Zheng, Tony Zhao, Philippe Hansen-Estruch, Quan Vuong, Andre He, Vivek Myers, Kuan Fang, Chelsea Finn, Sergey Levine.
CoRL 2023 | arXiv:2308.12952.

Other Publications

Autonomous Improvement of Instruction Following Skills via Foundation Models
Zhiyuan Zhou, Pranav Atreya, Abraham Lee, Homer Walke, Oier Mees, Sergey Levine.
CoRL 2024 | arXiv:2407.20635.

DROID: A Large-Scale In-The-Wild Robot Manipulation Dataset
Alexander Khazatsky, Karl Pertsch, et al.
RSS 2024 | arXiv:2403.12945.

Evaluating Real-World Robot Manipulation Policies in Simulation
Xuanlin Li, Kyle Hsu, Jiayuan Gu, Karl Pertsch, Oier Mees, Homer Walke, Chuyuan Fu, Ishikaa Lunawat, Isabel Sieh, Sean Kirmani, Sergey Levine, Jiajun Wu, Chelsea Finn, Hao Su, Quan Vuong, Ted Xiao.
CoRL 2024 | arXiv:2405.05941.

Zero-Shot Robotic Manipulation with Pretrained Image-Editing Diffusion Models
Kevin Black*, Mitsuhiko Nakamoto*, Pranav Atreya, Homer Walke, Chelsea Finn, Aviral Kumar, Sergey Levine.
ICLR 2024 | arXiv:2310.10639.

Open X-Embodiment: Robotic Learning Datasets and RT-X Models
Open X-Embodiment Collaboration
ICRA 2024 | arXiv:2310.08864.

Goal Representations for Instruction Following: A Semi-Supervised Language Interface to Control
Vivek Myers*, Andre He*, Kuan Fang, Homer Walke, Phillipe Hansen-Estruch, Ching-An Cheng, Mihai Jalobeanu, Andrey Kolobov, Anca Dragan, Sergey Levine.
CoRL 2023 | arXiv:2307.00117.

Stabilizing Contrastive RL: Techniques for Offline Goal Reaching
Chongyi Zheng, Benjamin Eysenbach, Homer Walke, Patrick Yin, Kuan Fang, Ruslan Salakhutdinov, Sergey Levine.
ICLR 2024 Spotlight | arXiv:2306.03346.

Generalization with Lossy Affordances: Leveraging Broad Offline Data for Learning Visuomotor Tasks
Kuan Fang, Patrick Yin, Ashvin Nair, Homer Walke, Gengchen Yan, Sergey Levine.
CoRL 2022 Oral | arXiv:2210.06601.

Don't Start From Scratch: Leveraging Prior Data to Automate Robotic Reinforcement Learning
Homer Walke, Jonathan Yang, Albert Yu, Aviral Kumar, Jedrzej Orbik, Avi Singh, Sergey Levine.
CoRL 2022 | arXiv:2207.04703.

PLAD: Learning to Infer Shape Programs with Pseudo-Labels and Approximate Distributions
R. Kenny Jones, Homer Walke, Daniel Ritchie.
CVPR 2022 | arXiv:2011.13045.

NeuralLTLf: Learning Linear Temporal Logic Specifications with a Specialized Neural Operator
Homer Walke, Daniel Ritter, Carl Trimbach, Michael Littman.
2021 | arXiv:2111.04147.

Learning Finite Linear Temporal Logic Formulas
Homer Walke.
2021 | Undergraduate Honors Thesis

Honors

CRA Outstanding Undergraduate Researcher Honorable Mention (2021)

Teaching Experience

Graduate Student Instructor August – December 2022
UC Berkeley
- Teaching assistant for CS285 Deep Reinforcement Learning at UC Berkeley.

Undergraduate Teaching Assistant September – December 2018
Brown University
- Teaching assistant for CSCI 0170, one of Brown's introductory computer science courses.

Technical Skills

Languages: Python, Java, C
Libraries: Jax, Tensorflow, PyTorch, NumPy