Homer Walke

homer_walke@berkeley.edu | homerwalke.com

EDUCATION

University of California - Berkeley   Berkeley, CA
PhD in Computer Science   *Anticipated Graduation May 2026*
- Advisor: Professor Sergey Levine

Brown University   Providence, RI
BS in Computer Science with Honors   *May 2021*
- Advisors: Professor Michael Littman, Professor Daniel Ritchie

RESEARCH INTERESTS

- Generative modeling for control: vision-language-action models, world modeling.

- Generative modeling of images and video: diffusion, flow matching, architectures.

RESEARCH EXPERIENCE

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

Intern at Physical Intelligence   Jan 2025 – Aug 2025
Physical Intelligence (physicalintelligence.company)

Undergraduate Researcher   June 2019 – May 2021
Brown University, Professor Michael Littman, Professor Daniel Ritchie

SELECTED PUBLICATIONS

MEM: Multi-Scale Embodied Memory for Vision Language Action Models
Marcel Torne*, Karl Pertsch*, Homer Walke, Kyle Vedder, Suraj Nair, Brian Ichter, Allen Z. Ren, Hauhuan Wang, Jiaming Tang, Kyle Stachowicz, Karan Dhabalia, Michael Equi, Quan Vuong, Jost Tobias Springenberg, Sergey Levine, Chelsea Finn, Danny Dreiss.
Pre-print, 2026 | website.

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, Tobias Kreiman, Ria Doshi, Charles Xu, Jianlan Luo, You Liang Tan, Lawrence Yunliang Chen, Pannag Sanketi, Quan Vuong, Ted Xiao, 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.

Knowledge Insulating Vision-Language-Action Models: Train Fast, Run Fast, Generalize Better
Danny Driess, Jost Tobias Springenberg, Brian Ichter, Lili Yu, Adrian Li-Bell, Karl Pertsch, Allen Z. Ren, Homer Walke, Quan Vuong, Lucy Xiaoyang Shi, Sergey Levine
NeurIPS 2025 | arXiv:2505.23705.

$\pi_{0.5}$: a Vision-Language-Action Model with Open-World Generalization
Physical Intelligence Team
CoRL 2025 | arXiv:2504.16054.

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