Haibo Zhao

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Education

Northeastern University Boston, MA **GPA: 3.9**
M.S. in Computer Science *Sep. 2022 – May 2025*

Xi'an Jiaotong University Xi'an, China
B.Eng. in Electronics Science and Technology (National Scholarship) *Sep. 2016 – Jun. 2020*

Publications

Equivariant Diffusion Policy for Sample-Efficient Robotic, *The International Journal of Robotics Research*
Dian Wang, Stephen Hart, David Surovik, Tarik Kelestemur, Haojie Huang, **Haibo Zhao**, Mark Yeatman, Xupeng Zhu, Boce Hu, Mingxi Jia, Jiuguang Wang, Robin Walters, Robert Platt
Extended work of CoRL 2024 Best Paper Finalist on equivariant diffusion policies for sample-efficient robotic learning leveraging task symmetries.

Generalizable Hierarchical Skill Learning via Object-Centric Representation, *IEEE Robotics and Automation Letters 2025 (Under Review)*
Haibo Zhao, Yu Qi, Boce Hu, Yizhe Zhu, Ziyan Chen, Xupeng Zhu, Owen Howell, Haojie Huang, Robin Walters, Dian Wang*, Robert Platt* → **[Project Page]**
Hierarchical skill learning framework bridging VLM/MLLM agents and diffusion policies via object-centric representations, achieving strong generalization across spatial arrangements and object instances.

BEAR: Benchmarking and Enhancing Multimodal Language Models for Atomic Embodied Capabilities, *ICLR (Under Review)*
Yu Qi*, **Haibo Zhao***, Ziyu Guo*, Siyuan Ma, Ziyan Chen, Yaokun Han, Renrui Zhang, Zitiantao Lin, Shiji Xin, Yijian Huang, Kai Cheng, Peiheng Wang, Jiazheng Liu, Jiayi Zhang, Yizhe Zhu, Wenqing Wang, Yiran Qin, Xupeng Zhu, Haojie Huang, Lawson L.S. Wong → **[Project Page]**
Large-scale benchmark spanning 4,469 interleaved image-video-text samples for evaluating multimodal language models on step-wise embodied capabilities including perception, reasoning, and action understanding.

Residual Rotation Correction using Tactile Equivariance, *IEEE Robotics and Automation Letters 2025 (Under Review)*
Yizhe Zhu, Zhang Ye, Boce Hu, **Haibo Zhao**, Yu Qi, Dian Wang, Robert Platt → **[Project Page]**
Tactile equivariance framework for residual rotation correction in robotic manipulation tasks, leveraging symmetries in tactile sensing for improved manipulation precision.

Hierarchical Equivariant Policy via Frame Transfer, *ICML 2025*
Haibo Zhao*, Dian Wang*, Yizhe Zhu, Xupeng Zhu, Owen Howell, Linfeng Zhao, Yaoyao Qian, Robin Walters, Robert Platt → **[Project Page]**
Frame transfer interface imposing soft constraints from high-level open-loop policies onto low-level closed-loop policies, combining strengths of both hierarchical approaches for improved sample efficiency.

Equivariant Diffusion Policy, *CoRL 2024.* **Best Paper Finalist**
Dian Wang, Stephen Hart, David Surovik, Tarik Kelestemur, Haojie Huang, **Haibo Zhao**, Mark Yeatman, Jiuguang Wang, Robin Walters, Robert Platt → **[Project Page]**
SO(2)-equivariant diffusion policy for 6-DoF robotic control leveraging task symmetries, achieving significant performance improvements in both simulation and real-world manipulation tasks.

Professional Experience

Research Assistant Jun. 2024 – Jul. 2025
Helping Hands Lab, NEU/ RAI (former Boston Dynamics AI) *Boston, MA*

Applied Scientist Co-op Jan. 2024 – Jun. 2024
Amazon Robotics *Boston, MA*

- Built a Kalman Filter based sharpness estimator to monitor camera focus status across 10+ Amazon workstations, improving health status.
- Designed and deployed a scalable health-monitoring system using AWS EC2, SNS, and SQS to ensure operational robustness.

Software Engineer Intern May 2023 – Sep. 2023
Coinbase *San Francisco, CA*

- Architected a bulk transfer pipeline in Go, increasing remediation throughput from 5K to over 1M concurrent requests.
- Integrated MongoDB, GraphQL, gRPC, Kafka, and AWS services (EC2, S3) to support scalable, paginated fund transfers.
- Built a React-based frontend to streamline user workflows and improve system accessibility.

Software Development Intern Jun. 2022 – Sep. 2022
AMD

Back-end Development Intern Apr. 2022 – Jun. 2022
Bytedance

Machine Learning Engineer Intern Apr. 2021 – Jun. 2021
iFLYTEK AI Lab

Service

Reviewer, **Conference on Robot Learning (CoRL)** 2025

Reviewer, **IEEE Robotics and Automation Letters (RA-L)** 2025

Awards

Northeastern University Research Apprenticeship, 2025