

KAIZHE HU

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🎓 EDUCATION

Tsinghua University , Ph.D., Institute for Interdisciplinary Information Science	2022–Present
Tsinghua University , B.S., Electronics Engineering	2019–2022
Biomedical Engineering studies, Tsinghua University	2018–2019

🏢 RESEARCH EXPERIENCE

Amazon, Frontier AI & Robotics (FAR)	Aug. 2026–Present
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Intern · Advisor: C. Karen Liu

Research on spatial understanding for humanoid robots, particularly while carrying objects.

The Movement Lab, Stanford University	Aug. 2024–Mar. 2025
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Visiting Researcher · Advisors: C. Karen Liu, Shuran Song

Worked on sim-to-real transfer and real-world reinforcement learning for humanoids, including robot-to-robot teaching for autonomous policy adaptation and learning.

Embodied AI Lab, Tsinghua University	Sept. 2022–Present
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Ph.D. Researcher; Founding Member · Advisor: Huazhe Xu

Study how robots acquire diverse skills and generalize in the real world through the dynamics and learned priors of generative models, data scaling, and autonomous real-world learning.

📖 SELECTED PUBLICATIONS

* Equal contribution † Corresponding authors

BURGER: Benchmarking and Understanding Robotic Generalization via Embodied Drawing arXiv preprint, 2026

Xiangyu Xu^{*}, Bangshuai Peng^{*}, Ziyi Liu^{*}, Mengjie Zhao^{*},
Chenhao Lu, Zhengyang Fan, Huazhe Xu[†], **Kaizhe Hu**[†]

A drawing benchmark for studying how data scaling and multimodal behavior affect robotic generalization.

AffordGen: Generating Diverse Demonstrations for Generalizable Object Manipulation with Affordance Correspondence CVPR 2026

Jiawei Zhang^{*}, **Kaizhe Hu**^{*}, Yingqian Huang, Yuanchen Ju, Zhengrong Xue, Huazhe Xu

Scales a single human demonstration into diverse trajectories across novel objects and categories using vision foundation models and semantic correspondence.

Robot Trains Robot: Automatic Real-World Policy Adaptation and Learning for Humanoids CoRL 2025; RSS WCBM Workshop Spotlight; Hardware Intelligence Workshop Oral

Kaizhe Hu^{*}, Haochen Shi^{*}, Yao He, Weizhuo Wang, C. Karen Liu[†], Shuran Song[†]

Uses a robot arm teacher to autonomously train a humanoid student for real-world adaptation and learning.

Stem-Ob: Generalizable Visual Imitation Learning with Stem-Like Convergent Observation through Diffusion Inversion ICLR 2025, Spotlight

Kaizhe Hu^{*}, Zihang Rui^{*}, Yao He, Yuyao Liu, Pu Hua, Huazhe Xu

Uses diffusion inversion to suppress low-level visual variation while preserving scene structure for generalizable visual imitation learning.

DenseMatcher: Learning 3D Semantic Correspondence for Category-Level Manipulation from One Demo

ICLR 2025, Spotlight

Junzhe Zhu*, Yuanchen Ju*, Junyi Zhang, Muhan Wang, Zhecheng Yuan, **Kaizhe Hu**, Huazhe Xu

Learns dense 3D semantic correspondences between objects, enabling cross-instance and cross-category manipulation from a single demonstration.

Robo-ABC: Affordance Generalization Beyond Categories via Semantic Correspondence for Robot Manipulation

ECCV 2024

Yuanchen Ju*, **Kaizhe Hu***, Guowei Zhang, Gu Zhang, Mingrun Jiang, Huazhe Xu

Enables robots to generalize manipulation skills to out-of-distribution objects using semantic correspondences derived from human videos, achieving zero-shot cross-category generalization.

Uni-O4: Unifying Online and Offline Deep Reinforcement Learning with Multi-Step On-Policy Optimization

ICLR 2024

Kun Lei, Zhengmao He*, Chenhao Lu*, **Kaizhe Hu**, Yang Gao, Huazhe Xu

Integrates offline and online reinforcement learning through a PPO-based algorithm, enabling sim-to-real fine-tuning of quadrupedal locomotion policies.

Can Pre-Trained Text-to-Image Models Generate Visual Goals for Reinforcement Learning?

NeurIPS 2023

Jialu Gao*, **Kaizhe Hu***, Guowei Xu, Huazhe Xu

Introduces LfVoid, which uses pre-trained text-to-image models and image editing to generate visual goals for reinforcement learning without in-domain training or expert demonstrations.

Decision Transformer under Random Frame Dropping (DeFog)

ICLR 2023

Kaizhe Hu*, Ray Chen Zheng*, Yang Gao, Huazhe Xu

Presents an offline reinforcement learning algorithm based on Decision Transformer that enables agents to act robustly under random frame dropping.

SERVICE & LEADERSHIP

Lead Organizer, Diffusion for Robot Learning: From Generation to Action

July 2026

RSS 2026 workshop, Sydney, Australia.

Teaching Assistant, Deep Reinforcement Learning, Tsinghua University

Spring 2023, 2024

SKILLS

- **Robotics hardware:** Experience with Unitree G1 humanoids, Sharpa Wave dexterous hand, Franka and UR robot arms, and Unitree Go1 quadrupeds.
- **Simulation & control:** MuJoCo, MJX, Isaac Gym; low-level impedance and PID controllers.
- **Machine learning:** Offline-to-online RL and real-world policy adaptation; diffusion-based visual representations; demonstration generation and data scaling.

HONORS & AWARDS

Outstanding Graduate Student of Comprehensive Quality, Tsinghua University

2024, 2025

First Prize, National Undergraduate Physics Competition (Beijing Area)

2019

Bronze Medal, Chinese Physics Olympiad

2017

MISCELLANEOUS

- Amateur cello player and former member of the Chinese Instrument Orchestra of Tsinghua University.
- Served as OFA (Olympic Family Assistant) during the Beijing 2022 Winter Games.
- A cinephile and amateur filmmaker who has tried his hand at documentaries.