

Zhenghao PENG

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RESEARCH INTERESTS

Robotics, Vision-Language-Action (VLA) Model, Human-in-the-loop Learning, (Multi-agent) Simulation, and Large-scale Reinforcement Learning.

My research focuses on building physically interactive agents that can reason, align with human intent, and generalize across diverse tasks. I aim at building foundation models for robotics—scalable, aligned, and deployable in the real world to improve human well-being.

A detailed [Research Statement](#) is available on my homepage.

Robots Experience: Unitree Go2 Quadruped Robot, Four-wheeled Delivery Robot.

EDUCATION

University of California, Los Angeles (UCLA) *September 2022 - May 2026 (Expected)*

- Ph.D. student at the Department of Computer Science, supervised by [Prof. Bolei Zhou](#).

The Chinese University of Hong Kong (CUHK) *August 2019 - July 2022*

- M.Phil. in Information Engineering, supervised by [Prof. Bolei Zhou](#) at Multimedia Lab (MMLab).

Shanghai Jiao Tong University (SJTU) *Sept. 2015 - July 2019*

- B.Eng. in Naval Architecture and Ocean Engineering. Member of Zhiyuan Honor Program.
- Research assistant supervised by [Prof. Li Jiang](#).

EXPERIENCE

NVIDIA, Santa Clara, CA *June 2025 - Present*

- Research intern in Autonomous Vehicle Group at NVIDIA Research. Manager: [Boris Ivanovic](#).
- Building training and evaluation pipeline for VLA models for autonomous driving. Developing algorithm to improve action alignment and enable counterfactual reasoning.

Waymo LLC, Mountain View, CA *June 2023 - September 2023*

- Research intern in behavior modeling. Mentored by [Justin Fu](#) and [Rowan McAllister](#).
- Improved the average displacement error of multi-agent behavior models by 25% using RL as a closed-loop post-training technique.

**Shenzhen Institutes of Advanced Technology (SIAT),
Chinese Academy of Sciences** *June 2018 - Sept. 2018*

- Research intern at Multimedia Research Center, under the supervision of [Prof. Yu Qiao](#).

OPEN-SOURCE PROJECTS

- I am a strong advocate of open-source and reproducible research. Most of my works are released with public code, and my contributions can be found on [GitHub](#).
- Notably, [MetaDrive](#) is an open-source driving simulator for reinforcement learning and autonomous driving. It has received ~1000 GitHub stars and 350+ citations, and is widely adopted in research community.

AWARDS AND HONORS

- Dissertation Year Award 2025-2026, UCLA
- Amazon Fellowship, 2024-2025, UCLA
- University Fellowship, 2023-2024, 2024-2025, UCLA
- The Outstanding Tutors Award 2021 of the Faculty of Engineering, 2021, CUHK

- Teaching Assistant Award, Term 1 2020 - 2021, Term 2 2020 - 2021, CUHK
- Postgraduate Studentship, 2019 - 2022, CUHK
- Zhiyuan Honors Scholarship, 2015 - 2017, SJTU

RESEARCH PAPERS

- [1] **Zhenghao Peng**, Yuxin Liu, and Bolei Zhou. InfGen: Scenario Generation as Next-Token-Group Prediction. In *Preprint*, 2025 [[Webpage](#), [PDF](#)]
- [2] Yuxin Liu*, **Zhenghao Peng***, Xuanhao Cui, and Bolei Zhou. Adv-BMT: Bidirectional Motion Transformer for Safety-Critical Traffic Scenario Generation. In *Preprint*, 2025 (**NeurIPS 2025**) [[Webpage](#), [PDF](#)]
- [3] Haoyuan Cai, **Zhenghao Peng**, and Bolei Zhou. Robot-Gated Interactive Imitation Learning with Adaptive Intervention Mechanism. *International Conference on Machine Learning*, 2025 (**ICML 2025**) [[PDF](#), [Code](#), [Webpage](#)]
- [4] Weizhen Wang, Chenda Duan, **Zhenghao Peng**, Yuxin Liu, and Bolei Zhou. Embodied Scene Understanding for Vision Language Models via MetaVQA. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2025 (**CVPR 2025**) [[PDF](#), [Code](#), [Webpage](#)]
- [5] Ziyang Xie, Zhizheng Liu, **Zhenghao Peng**, Wayne Wu, and Bolei Zhou. Vid2Sim: Realistic and Interactive Simulation from Video for Urban Navigation. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2025 (**CVPR 2025**) [[PDF](#), [Code](#), [Webpage](#)]
- [6] **Zhenghao Peng**, Zhizheng Liu, and Bolei Zhou. Data-Efficient Learning from Human Interventions for Mobile Robots. *2025 IEEE International Conference on Robotics and Automation (ICRA)*, 2025 (**ICRA 2025**) [[Webpage](#), [PDF](#)]
- [7] **Zhenghao Peng**, Wenjie Luo, Yiren Lu, Tianyi Shen, Cole Gulino, Ari Seff, and Justin Fu. Improving Agent Behaviors with RL Fine-tuning for Autonomous Driving. *European Conference on Computer Vision*, 2024 (**ECCV 2024**) [[PDF](#)]
- [8] Yunsong Zhou, Michael Simon, **Zhenghao Peng**, Sicheng Mo, Hongzi Zhu, Minyi Guo, and Bolei Zhou. SimGen: Simulator-conditioned Driving Scene Generation. *Advances in Neural Information Processing Systems*, 2024 (**NeurIPS 2024**) [[PDF](#), [Webpage](#)]
- [9] Brandon J. McMahan, **Zhenghao Peng**, Bolei Zhou, and Jonathan C. Kao. Shared Autonomy with IDA: Interventional Diffusion Assistance. *Advances in Neural Information Processing Systems*, 2024 (**NeurIPS 2024**) [[PDF](#)]
- [10] **Zhenghao Peng**, Wenjie Mo, Chenda Duan, Quanyi Li, and Bolei Zhou. Learning from Active Human Involvement through Proxy Value Propagation. *Advances in Neural Information Processing Systems*, 2023 (**NeurIPS 2023 Spotlight**) [[PDF](#), [Webpage](#)]
- [11] Quanyi Li*, **Zhenghao Peng***, Lan Feng, Zhizheng Liu, Chenda Duan, Wenjie Mo, and Bolei Zhou. ScenarioNet: Open-Source Platform for Large-Scale Traffic Scenario Simulation and Modeling. *Advances in Neural Information Processing Systems*, 2023 (**NeurIPS 2023**) [[PDF](#), [Code](#), [Webpage](#)]
- [12] Linrui Zhang, **Zhenghao Peng**, Quanyi Li, and Bolei Zhou. CAT: Closed-loop Adversarial Training for Safe End-to-End Driving. In *7th Annual Conference on Robot Learning*, 2023 (**CoRL 2023**) [[PDF](#), [Code](#), [Webpage](#)]
- [13] Lan Feng*, Quanyi Li*, **Zhenghao Peng***, Shuhan Tan, and Bolei Zhou. TrafficGen: Learning to Generate Diverse and Realistic Traffic Scenarios. In *2023 International Conference on Robotics and Automation (ICRA)*. IEEE, 2023 (**ICRA 2023**) [[PDF](#), [Code](#), [Webpage](#)]
- [14] Zhenghai Xue, **Zhenghao Peng**, Quanyi Li, Zhihan Liu, and Bolei Zhou. Guarded Policy Optimization with Imperfect Online Demonstrations. In *International Conference on Learning Representations*, 2023 (**ICLR 2023**) [[PDF](#), [Code](#), [Webpage](#)]
- [15] Quanyi Li, **Zhenghao Peng**, Haibin Wu, Lan Feng, and Bolei Zhou. Human-AI Shared Control via Policy Dissection. *Advances in Neural Information Processing Systems*, 2022 (**NeurIPS 2022**) [[PDF](#), [Code](#), [Webpage](#)]
- [16] Qihang Zhang, **Zhenghao Peng**, and Bolei Zhou. Learning to Drive by Watching YouTube videos: Action-Conditioned Contrastive Policy Pretraining. *European Conference on Computer Vision*, 2022 (**ECCV 2022**) [[PDF](#), [Webpage](#)]

- [17] Quanyi Li*, **Zhenghao Peng***, Zhenghai Xue, Qihang Zhang, and Bolei Zhou. Metadrive: Composing diverse driving scenarios for generalizable reinforcement learning. *IEEE transaction on Pattern Analysis and Machine Intelligence*, 2021 (**TPAMI**) [[PDF](#), [Code](#), [Webpage](#)]
- [18] Mingxin Huang, Yuliang Liu, **Zhenghao Peng**, Chongyu Liu, Dahua Lin, Shenggao Zhu, Nicholas Yuan, Kai Ding, and Lianwen Jin. SwinTextSpotter: Scene Text Spotting via Better Synergy between Text Detection and Text Recognition. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 2022 (**CVPR 2022**) [[PDF](#), [Code](#)]
- [19] Quanyi Li*, **Zhenghao Peng***, and Bolei Zhou. Efficient Learning of Safe Driving Policy via Human-AI Copilot Optimization. In *International Conference on Learning Representations*, 2022 (**ICLR 2022**) [[PDF](#), [Code](#), [Webpage](#)]
- [20] **Zhenghao Peng***, Quanyi Li*, Chunxiao Liu, and Bolei Zhou. Safe Driving via Expert Guided Policy Optimization. In *5th Annual Conference on Robot Learning*, 2021 (**CoRL 2021**) [[PDF](#), [Code](#), [Webpage](#), [Poster](#)]
- [21] **Zhenghao Peng**, Quanyi Li, Ka Ming Hui, Chunxiao Liu, and Bolei Zhou. Learning to Simulate Self-Driven Particles System with Coordinated Policy Optimization. *Advances in Neural Information Processing Systems*, 34, 2021 (**NeurIPS 2021**) [[PDF](#), [Code](#), [Webpage](#), [Poster](#)]
- [22] **Zhenghao Peng**, Hao Sun, and Bolei Zhou. Non-local Policy Optimization via Diversity-regularized Collaborative Exploration. *arXiv preprint arXiv:2006.07781*, 2020 [[PDF](#)]
- [23] Zhuoran Song, Dongyu Ru, Ru Wang, Hongru Huang, **Zhenghao Peng**, Jing Ke, Xiaoyao Liang, and Li Jiang. Approximate Random Dropout. In *Design, Automation & Test in Europe Conference & Exhibition, 2019. DATE'19*. IEEE, 2019 [[PDF](#)]
- [24] **Zhenghao Peng**, Xuyang Chen, Chengwen Xu, Naifeng Jing, Xiaoyao Liang, Cewu Lu, and Li Jiang. AXNet: Approximate computing using an end-to-end trainable neural network. In *Proceedings of the 2018 International Conference on Computer-Aided Design. ICCAD'18*. IEEE/ACM, 2018 [[PDF](#)]

TALKS

- Human-in-the-loop Agent Learning, EECS 598: Action and Perception Guest Lecture, invited by: Stella Yu, May 2024

TEACHING EXPERIENCES

- CS260R Reinforcement Learning, UCLA, 2025 Winter
- CS260R Reinforcement Learning, UCLA, 2023 Fall
- CS269 Seminar on Reinforcement Learning, UCLA, 2022 Fall
- IERG5350 Reinforcement Learning, CUHK, Term 1, 2021-22
- CSCI2100E Data Structures, CUHK, Term 2, 2020-21
- IERG5350 Reinforcement Learning, CUHK, Term 1, 2020-21
- IERG6130 Seminar on Reinforcement Learning, CUHK, Term 2, 2019-20

MISCELLANEOUS

- **Reviewer:** NeurIPS, ICML, CVPR, ECCV, ICLR, CoRL, RSS, IROS, ICRA, AAAI, TNNLS, IJCV, ICCV, RA-L, *etc.*
- **Frameworks:** PyTorch, Jax, TensorFlow, Ray, RLLib, Keras, ROS2, *etc.*
- **Skills:** \LaTeX , Keynote, Photoshop, Final Cut Pro, Git, Cantonese, Photography, *etc.*