

# Haoxiang Wang

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## Education

- 2019–2024 **University of Illinois, Urbana-Champaign, Urbana, IL, USA.**  
Ph.D. *Electrical & Computer Engineering*  
Research Area: *Machine Learning*. Thesis Advisors: Dr. Han Zhao and Dr. Bo Li
- 2015–2019 **University of Illinois, Urbana-Champaign, Urbana, IL, USA.**  
B.S. with Highest Distinctions. Double Majors:  
(1) *Statistics & Computer Science* (2) *Physics*

## Professional Experience

- 2024–Present **NVIDIA Research.**  
Research Scientist on Generative AI  
Manager: Dr. Ming-Yu Liu
- 2023 Summer **Apple AI/ML.**  
Research Intern on Machine Learning  
Paper: *Merging Vision Foundation Models towards Semantic and Spatial Understanding*  
Managers: Dr. Hadi Pouransari & Dr. Oncel Tuzel
- 2022 Summer **Amazon Web Services.**  
Research Intern on Quantum Machine Learning  
Paper: *Predicting Properties of Quantum Systems with Conditional Generative Models*  
Managers: Dr. Cedric Yen-Yu Lin & Dr. Peter Komar
- 2021 Summer **Waymo LLC**, (formerly the Google self-driving car project).  
Research Intern on Machine Learning  
Project: *Improving Robustness of Perception Systems with Mixture-of-Experts (MoE)*  
Manager: Dr. Zhao Chen

## Research Interests

**Multi-Modal AI, Video World Models, Large Language Models (LLM)**

## Publications

(\* indicates equal contribution.)

### ***Foundation Models (Large Language Models and Multi-Modal Models)***

- EMNLP 2024 **Interpretable Preferences via Multi-Objective Reward Modeling and Mixture-of-Experts.**  
Haoxiang Wang\*, Wei Xiong\*, Tengyang Xie, Han Zhao, Tong Zhang  
**EMNLP Findings**, 2024.
- EMNLP 2024 **Semi-Supervised Reward Modeling via Iterative Self-Training.**  
Yifei He\*, Haoxiang Wang\*, Ziyang Jiang, Alexandros Papangelis, Han Zhao  
**EMNLP Findings**, 2024.
- TMLR 2024 **RLHF Workflow: From Reward Modeling to Online RLHF.**  
Hanze Dong\*, Wei Xiong\*, Bo Pang\*, Haoxiang Wang\*, Han Zhao, Yingbo Zhou, Nan Jiang, Doyen Sahoo, Caiming Xiong, Tong Zhang  
Transactions on Machine Learning Research (TMLR), 2024
- ACL 2024 **Arithmetic Control of LLMs for Diverse User Preferences: Directional Preference Alignment with Multi-Objective Rewards.**  
Haoxiang Wang\*, Yong Lin\*, Wei Xiong\*, Rui Yang, Shizhe Diao, Shuang Qiu, Han Zhao, Tong Zhang  
**ACL**, 2024.

- TMLR 2024 **Enhancing Compositional Generalization via Compositional Feature Alignment.**  
Haoxiang Wang\*, Haozhe Si\*, Han Zhao  
Transactions on Machine Learning Research (TMLR), 2024
- CVPRW 2024 **SAM-CLIP: Merging Vision Foundation Models towards Semantic and Spatial Understanding.**  
Haoxiang Wang, Pavan Kumar Anasosalu Vasu, Fartash Faghri, Raviteja Vemulapalli, Mehrdad Farajtabar, Sachin Mehta, Mohammad Rastegari, Oncel Tuzel, Hadi Pouransari  
CVPR Workshop, Efficient Large Vision Models (Spotlight), 2024.
- [\*Multi-Task Learning and Meta-Learning\*](#)
- 2022 **Predicting Properties of Quantum Systems with Conditional Generative Models.**  
Haoxiang Wang\*, Maurice Weber\*, Josh Izaac, Cedric Yen-Yu Lin  
Under review of **Quantum**
- CVPR 2022 **Global Convergence of MAML and Theory-Inspired Neural Architecture Search for Few-Shot Learning.**  
Haoxiang Wang\*, Yite Wang\*, Ruoyu Sun, Bo Li  
Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
- ICML 2021 **Bridging Multi-Task Learning and Meta-Learning: Towards Efficient Training and Effective Adaptation.**  
Haoxiang Wang, Han Zhao, Bo Li  
International Conference on Machine Learning (ICML), 2021.
- [\*Robust and Trustworthy AI under Data Distribution Shifts\*](#)
- JMLR 2024 **Gradual Domain Adaptation: Theory and Algorithms.**  
Yifei He\*, Haoxiang Wang\*, Bo Li, Han Zhao  
Journal of Machine Learning Research (JMLR), 2024
- 2023 **Invariant Feature Subspace Recovery: A New Class of Provable Domain Generalization Algorithms.**  
Haoxiang Wang\*, Gargi Balasubramaniam\*, Haozhe Si, Bo Li, Han Zhao  
Under review of Journal of Machine Learning Research (JMLR)
- ICML 2022 **Provable Domain Generalization via Invariant-Feature Subspace Recovery.**  
Haoxiang Wang, Haozhe Si, Bo Li, Han Zhao  
International Conference on Machine Learning (ICML), 2022.
- ICML 2022 **Understanding Gradual Domain Adaptation: Improved Analysis, Optimal Path and Beyond.**  
Haoxiang Wang, Bo Li, Han Zhao  
International Conference on Machine Learning (ICML), 2022.
- UAI 2022 **Future Gradient Descent for Adapting the Temporal Shifting Data Distribution in Online Recommendation System.**  
Mao Ye, Ruichen Jiang, Haoxiang Wang, Dhruv Choudhary, Xiaocong Du, Bhargav Bhushanam, Aryan Mokhtari, Arun Kejariwal, Qiang Liu  
Conference on Uncertainty in Artificial Intelligence (UAI), 2022.
- [\*Optimization\*](#)
- NeurIPS 2019 **Learning Positive Functions with Pseudo Mirror Descent.**  
Yingxiang Yang, Haoxiang Wang, Negar Kiyavash, Niao He  
Neural Information Processing Systems (NeurIPS), 2019. (Spotlight Presentation)

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## Open-Source Software

- 2024 **RLHFlow - Reward Modeling**, <https://github.com/RLHFlow/RLHF-Reward-Modeling>,  
Open-source code to train reward models for RLHF/alignment of large language models. .

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## Service

- 2020-Now **Reviewer**, *ICML, NeurIPS, ICLR, ICCV, CVPR, TMLR, AISTATS, AAAI.*