Haonan Wang

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EDUCATION

Ph.D. at National University of Singapore — Singapore
Doctor of philosophy in Computer Science — *2023 – Present*
- **Advisor:** Kenji Kawaguchi

Ph.D. at University of Illinois at Urbana–Champaign — Urbana-Champaign, IL
Doctor of philosophy in Information Science — *2020 – 2021 (leaved)*
- **Advisor:** Jingrui He

B.Sc. at University of Illinois at Urbana–Champaign — Urbana-Champaign, IL
Bachelor of science in Computer Science & Statistics — *2017 – 2020*
- Overall GPA:3.86 / 4.00
- **Advisor:** Jiawei Han

RESEARCH INTEREST

My research focuses on data-centric and generative artificial intelligence. I focus on scrutinizing high-quality datasets to improve the capacity and reliability of AI models, including diffusion and multimodal language models. My goal is to develop AI that comprehends and complements human behaviors, ensuring that the technology advances in harmony with human values and augments human capabilities.

AWARD

- ICML 2024 Oral Paper Award — June 2024
- NeurIPS 2022 Outstanding Paper Award — December 2022
- National University of Singapore, Graduate Research Scholarship — October 2022
- Graduate College Conference Presentation Award — May 2021
- The Web Conference 2021 Student Scholarship Award — March 2021
- C.W. Gear Outstanding Undergraduate Student (Two Students each year) — April 2020
- Honorable Mention Award, 19th Interdisciplinary Contest In Modeling (ICM) — *April 2017*

PUBLICATION

First author and joint-first author

(* denotes joint-first author)

- Haonan Wang, Qianli Shen, Yao Tong, Yang Zhang, Kenji Kawaguchi: *The Stronger the Diffusion Model, the Easier the Backdoor: Data Poisoning to Induce Copyrigh Breaches Without Adjusting Finetuning Pipeline*. International Conference on Machine Learning (**ICML**), 2024. Oral Paper Award (Top 2.37% of all accepted papers).

- Haonan Wang*, Ziwei Wu*, Jingrui He: *Training Fair Deep Neural Networks by Balancing Influence*. The 17th ACM International Conference on Web Search and Data Mining (**WSDM**), 2023.

- Haonan Wang, Jieyu Zhang, Qi Zhu, Wei Huang, Kenji Kawaguchi, Xiaokui Xiao: *Can Single-Pass Contrastive Learning Work for Both Homophilic and Heterophilic Graph?*. Transactions on Machine Learning Research (**TMLR**), 08-2023.

- Haonan Wang, Wei Huang, Andrew Margenot, Hanghang Tong, Jingrui He: *Deep Active Learning by Leveraging Training Dynamics*. Proceedings of the Conference on Neural Information Processing Systems (**NeurIPS**), 2022.

- Jieyu Zhang*, Haonan Wang*, Cheng-Yu Hsieh, Alexander Ratner: *Understanding Programmatic Weak Supervision via Source-aware Influence Function*. Proceedings of the Conference on Neural Information Processing Systems (**NeurIPS**), 2022.

- Haonan Wang, Chang Zhou, Honxia Yang, Carl Yang, Jingrui He: *Controllable Gradient Item Retrieval*. Proceedings of the International World Wide Web Conference (**WWW**), 2021.

Others

- Jianyang Gu, Saeed Vahidian, Vyacheslav Kungurtsev, Haonan Wang, Wei Jiang, Yang You, and Yiran Chen. *Efficient Dataset Distillation via Minimax Diffusion.* Conference on Computer Vision and Pattern Recognition (**CVPR**), 2024.

- Hailin Zhang, Yujing Wang, Qi Chen, Ruiheng Chang, Ting Zhang, Ziming Miao, Yingyan Hou, Yang Ding, Xupeng Miao, Haonan Wang, Bochen Pang, Yuefeng Zhan, Hao Sun, Weiwei Deng, Qi Zhang, Fan Yang, Xing Xie, Mao Yang, Bin Cui: *Model-enhanced Vector Index*. Proceedings of the Conference on Neural Information Processing Systems (**NeurIPS**), 2023.

- Tianyang Hu, Fei Chen, Haonan Wang, Jiawei Li, Wenjia Wang, Jiacheng Sun, Zhenguo Li: *Complexity Matters: Rethinking the Latent Space for Generative Modeling*. Proceedings of the Conference on Neural Information Processing Systems (**NeurIPS**), 2023.

- Wei Huang, Yuan Cao, Haonan Wang, Xin Cao, Taiji Suzuki: *Graph Neural Networks Provably Benefit from Structural Information: A Feature Learning Perspective*. International Conference on Machine Learning (**ICML - HiLD**), 2023.

- Chengkai Hou, Jieyu Zhang, Haonan Wang, Tianyi Zhou: *Subclass-balancing Contrastive Learning for Long-tailed Recognition*. International Conference on Computer Vision (**ICCV**), 2023.

- Zhengyu Hu, Jieyu Zhang, Haonan Wang, Siwei Liu, Shangsong Liang: *Leveraging Relational Graph Neural Network for Transductive Model Ensemble*. SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2023.

- Yujing Wang, Yingyan Hou, Haonan Wang, Ziming Miao, Shibin Wu, Hao Sun, Qi Chen, Yuqing Xia, Chengmin Chi, Guoshuai Zhao, Zheng Liu, Xing Xie, Hao Sun, Weiwei Deng, Qi Zhang, Mao Yang: *A Neural Corpus Indexer for Document Retrieval*. Proceedings of the Conference on Neural Information Processing Systems (**NeurIPS**), 2022. Outstanding Paper Award (Top 7/3391).

- Qi Zhu, Yidan Xu, Haonan Wang, Chao Zhang, Jiawei Han, Carl Yang: *Transfer Learning of Graph Neural Networks with Ego-graph Information Maximization*. Proceedings of the Conference on Neural Information Processing Systems (**NeurIPS**), 2021.

- Carl Yang, Haonan Wang, Lichao Sun and Bo Li: *Secure Network Release with Link Privacy*. Proceedings of the International Joint Conference on Artificial Intelligence (**IJCAI**), 2021.

- Carl Yang, Jieyu Zhang, Haonan Wang, Sha Li, Myunghwan Kim, Matthew Walker, Yiou Xiao and Jiawei Han: *Relation Learning on Social Networks with Multi-Modal Graph Edge Variational Autoencoder*. Proceedings of the ACM International Conference on Web Search and Data Mining (**WSDM**), 2020.

- Carl Yang*, Jieyu Zhang*, Haonan Wang, Bangzheng Li and Jiawei Han: *Neural Concept Map Generation for Effective Document Classification with Interpretable Structured Summarization*. Proceedings of the ACM International Conference on Research and Development in Information Retrieval (**SIGIR**), 2020.

MANUSCRIPT

- Haonan Wang, James Zou, Michael Mozer, Linjun Zhang, Anirudh Goyal, Alex Lamb, Zhun Deng, Michael Qizhe Xie, Hannah Brown, and Kenji Kawaguchi. *Can AI Be as Creative as Humans?.* arXiv preprint.

- Haonan Wang*, Minbin Huang*, Runhui Huang, Lanqing Hong, Hang Xu, Tianyang Hu, Xiaodan Liang, Zhenguo Li: *Boosting Visual-Language Models by Exploiting Hard Samples*. Arxiv Preprint.

- Yao Zhou*, Haonan Wang*, Jingrui He, Haixun Wang: From Intrinsic to Counterfactual: *On the Explainability of Contextualized Recommender Systems*. Arxiv Preprint.

TEACHING EXPERIENCE

- UIUC IS 577, Data Mining *August 2021 – December 2021*
- UIUC ECE 490, Introduction to Optimization *January 2020 – May 2020*

PROFESSIONAL SERVICE

- Conference Reviewer: ICLR(2024), AISTATS(2024), NeurIPS (2022,2023), ICML (2022, 2023), WSDM(2023), AAAI (2023, 2022), LoG (2022), KDD (2021), CIKM (2021), PAKDD (2021), ECML-PKDD (2020)
- Workshop Reviewer: NeurIPS 2022 AI4Science, FedGraph 2022, ICML 2022 AI4Science
- Journal Reviewer: IEEE Transactions on Big Data

INDUSTRY EXPERIENCE

Microsoft Research Lab – Asia Beijing, CN

Research Intern, Supervisor: Yujing Wang February 2022 – May 2022

- Developed a training paradigm for document retrieval, which unify the learning and indexing stages with an end-to-end deep neural network.

Alibaba Group Beijing, China

Research Intern, Supervisor: Hongxia Yang *June 2020 – September 2020*

- Proposed the gradient item retrieval task and developed a weakly-supervised disentangled learning method for the item retrieval.