

Yifei He | Curriculum Vitae

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I am interested in making foundation models and agents learn from multiple sources and tasks in an efficient, robust and scalable manner. In particular, I work on i) Computer use agents. ii) Multi-domain learning for foundation models (model merging, multilingual LLMs). iii) LLM data (reward modeling) and inference efficiency (MoE). Previously, I have worked on multi-objective optimization, domain adaptation and multimodal learning.

Education

University of Illinois Urbana-Champaign (UIUC)

Ph.D. in Computer Science

Urbana, IL, USA

Aug 2021 - May 2026 (Expected)

University of Michigan (UM)

B.S.E. in Data Science, minor in Mathematics
Summa Cum Laude

Ann Arbor, MI, USA

Aug 2019 - Apr 2021

Shanghai Jiao Tong University (SJTU)

B.S.E. in Electrical and Computer Engineering

Shanghai, China

Sept 2017 - Aug 2021

Industry Experience

Microsoft

Applied Scientist Intern, Turing

Redmond, WA, USA

May 2025 - Aug 2025

● Improved reasoning capabilities of computer-use agent.

Aug 2024 - Feb 2025

Research Intern, GenAI

● Improved efficiency of Mixture-of-Experts (MoE) models.

Applied Scientist Intern, Turing

May 2024 - Aug 2024

● Developed scaling laws for multilingual language models.

Amazon

Applied Scientist Intern, Search Science and AI

Seattle, WA, USA

May 2023 - Aug 2023

● Improved large-scale multi-task tuning of foundation models.

● Developed a vision-language retrieval foundation model with instruction tuning.

Publications (* denotes equal contribution)

[1] Scalable Data Synthesis for Computer Use Agents with Step-Level Filteringing.

Yifei He*, Pranit Chawla*, Yaser Souris, Subhrojit Som, Xia Song

Under review.

[2] MergeBench: A Benchmark for Merging Domain-Specialized LLMs.

Yifei He, Siqi Zeng, Yuzheng Hu, Rui Yang, Tong Zhang, Han Zhao

Neural Information Processing Systems Datasets and Benchmarks Track. (NeurIPS 2025)

[3] Efficiently Editing Mixture-of-Experts Models with Compressed Experts.

Yifei He, Yang Liu, Chen Liang, Hany Awadalla.

Conference on Empirical Methods in Natural Language Processing 2025. (EMNLP 2025 Findings)

[4] Scaling Laws for Multilingual Language Models.

Yifei He, Alon Benhaim, Barun Patra, Praneetha Vaddamanu, Sanchit Ahuja, Parul Chopra, Vishrav Chaudhary, Han Zhao, Xia Song.

Meeting of the Association for Computational Linguistics. (ACL 2025 Findings)

- [5] **Efficient Model Editing with Task Vector Bases: A Theoretical Framework and Scalable Approach.**
 Siqi Zeng, **Yifei He**, Weiqiu You, Yifan Hao, Yao-Hung Hubert Tsai, Makoto Yamada, Han Zhao.
Under review.
- [6] **Towards Understanding the Fragility of Multilingual LLMs against Fine-Tuning Attacks.**
 Samuele Poppi, Zheng-Xin Yong, **Yifei He**, Bobbie Chern, Han Zhao, Aobo Yang, Jianfeng Chi.
The Nations of the Americas Chapter of the Association for Computational Linguistics 2025. (NAACL 2025 Findings)
- [7] **Localize-and-Stitch: Efficient Model Merging via Sparse Task Arithmetic.**
Yifei He, Yuzheng Hu, Yong Lin, Tong Zhang, Han Zhao.
Transactions of Machine Learning Research. (TMLR, J2C Certificate)
- [8] **Semi-Supervised Reward Modeling via Iterative Self-Training.**
Yifei He*, Haoxiang Wang*, Ziyan Jiang, Alexandros Papangelis, Han Zhao.
Conference on Empirical Methods in Natural Language Processing 2024. (EMNLP 2024 Findings)
- [9] **Robust Multi-Task Learning with Excess Risks.**
Yifei He, Shiji Zhou, Guojun Zhang, Hyokun Yun, Yi Xu, Belinda Zeng, Trishul Chilimbi, Han Zhao.
International Conference on Machine Learning. (ICML 2024)
- [10] **Gradual Domain Adaptation: Theory and Algorithms.**
Yifei He*, Haoxiang Wang*, Bo Li, Han Zhao.
Journal of Machine Learning Research. (JMLR)
- [11] **Efficient Modality Selection in Multimodal Learning.**
Yifei He*, Runxiang Cheng*, Gargi Balasubramaniam*, Yao-Hung Hubert Tsai, Han Zhao.
Journal of Machine Learning Research. (JMLR)
 (Extended version of publication [12].)
- [12] **Greedy Modality Selection via Approximate Submodular Maximization.**
 Runxiang Cheng*, Gargi Balasubramaniam*, **Yifei He***, Yao-Hung Hubert Tsai, Han Zhao.
Conference on Uncertainty in Artificial Intelligence. (UAI 2022)
- [13] **Conformer-RL: A Deep Reinforcement Learning Library for Conformer Generation.**
 Runxuan Jiang, Tarun Gogineni, Joshua Kammeraad, **Yifei He**, Ambuj Tewari, Paul Zimmerman.
Journal of Computational Chemistry. (JCC)
- [14] **A Hierarchical Approach to Multi-Event Survival Analysis.**
 Donna Tjandra, **Yifei He**, Jenna Wiens.
AAAI Conference on Artificial Intelligence. (AAAI 2021)

Professional Service

Reviewer: UAI, NeurIPS, ICLR, AISTATS, ICML, TMLR, ACL

Teaching Experience

Teaching assistant at UIUC

- CS 598 Foundations of Data Science 2025 Fall
- CS 357 Numerical Methods I 2022 Fall, 2022 Spring
- CS 441 Applied Machine Learning 2021 Fall

Teaching assistant at UM

- EECS 445 Intro to Machine Learning 2020 Fall

Skills

Framework: TRL, PyTorch, DeepSpeed, TensorFlow, Keras, Gym