Jiaru Zou

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EDUCATION

University of Illinois Urbana-Champaign (UIUC)   Urbana, IL
M.S. in Computer Science (*with Thesis*)   Aug 18 2024 – May 17 2026
- GPA: 4.0/4.0
- Thesis Advisor: Prof. Jingrui He

University of Illinois Urbana-Champaign (UIUC)   Urbana, IL
B.S. in Computer Engineering   Aug 18 2020 – May 17 2024
- GPA: 3.99/4.0, **highest honors graduation (~Top 1%)**
- Thesis (advised by Prof. Jiawei Han): Towards Advanced Training Data Generation with LLMs.

RESEARCH INTEREST

My research lies in the intersection of **Machine Learning** and **Natural Language Processing**, with a specific focus on **LLMs Reasoning** and **Agentic AI**. Specifically, I study (i) **LLM post-training**, including RLHF, reward modeling, and test-time scaling; (ii) **agentic reasoning**, including single/multi-agent systems, tool integration, RAG; and (iii) **data-centric learning**, including efficient data selection, representation learning on structured/multimodal data.

SELECTED EXPERIENCE

UIUC iDEA-iSAIL Lab   Aug 2024 – Present
Research Assistant, Advisor: Prof. Jingrui He
- Developed an auxiliary learning framework to learn from mistakes during fine-tuning. (NeurIPS'25 spotlight)
- Integrated LLM ensemble learning algorithms for structured data. (ACL'25, EMNLP'25)
- Designed a sequential decision-making algorithm to balance exploration-exploitation on graphs (NeurIPS'23/'24).

Princeton AI Lab   Jan 2025 – Present
Research Assistant, Advisors: Dr. Ling Yang, Prof. Mengdi Wang
- Developed a trajectory-aware process reward model for long CoT reasoning. (NeurIPS'25)
- Designed and evaluated dynamic tool-selection and integration frameworks for robust agentic reasoning.

Google DeepMind   Aug 2025 – Present
Student Researcher @ GenAI Team, Mentor: Dr. Wei Li
- Designed UI-control agents on Gemini-2.5-Pro with end-to-end policy optimization.
- Collaborated with AlphaGenome team to develop tool-integrated agents for gene expression prediction.

Amazon.com, Inc   May 2025 – Aug 2025
Applied Scientist Intern, Mentors: Dr. Soumya Roy, Dr. Vinay Verma
- Developed a tool-grounded and thinking reward model for tabular reasoning.

Microsoft Research   Aug 2023 – June 2024
Research Intern @ DKI Team, Mentor: Dr. Mengyu Zhou
- Designed a progressive finetuning approach to save inference overhead during LLM finetuning. (EMNLP'24)
- Proposed a table provider for streamlined tabular reasoning in LLMs, later deployed in Excel Copilot. (EMNLP'24)
- Developed a retrieve-refined framework to enhance LLMs' code generation ability. (EMNLP'24)

SELECTED PUBLICATIONS

Peer-Reviewed Conferences ("*" denotes equal contribution)

[1] **Transformer Copilot: Learning from The Mistake Log in LLM Fine-tuning**
<u>Jiaru Zou</u>, Yikun Ban, Zihao Li, Yunzhe Qi, Ruizhong Qiu, Ling Yang, and Jingrui He.
*In The Thirty-Ninth Annual Conference on Neural Information Processing Systems (**NeurIPS 2025** spotlight)*.

[2] **ReasonFlux-PRM: Trajectory-Aware PRMs for Long Chain-of-Thought Reasoning in LLMs**
<u>Jiaru Zou</u>*, Ling Yang*, Jingwen Gu*, Jiahao Qiu, Ke Shen, Jingrui He, Mengdi Wang.

*In The Thirty-Ninth Annual Conference on Neural Information Processing Systems **(NeurIPS 2025)**.*

[3] **STEM-PoM: Evaluating Language Models Math-Symbol Reasoning in Document Parsing**
<u>Jiaru Zou</u>, Qing Wang, Pratyush Thakur, and Nickvash Kani.
*In The 63rd Annual Meeting of the Association for Computational Linguistics **(ACL 2025)**.*

[4] **LLM-Forest: Ensemble Learning of LLMs with Graph-Augmented Prompts for Data Imputation**
Xinrui He, Yikun Ban, <u>Jiaru Zou</u>, Tianxin Wei, Curtiss B. Cook, and Jingrui He.
*In The 63rd Annual Meeting of the Association for Computational Linguistics **(ACL 2025)**.*

[5] **Not All Voices Are Rewarded Equally: Probing and Repairing Reward Models across Human Diversity**
Zihao Li, Feihao Fang, Xitong Zhang, <u>Jiaru Zou</u>, Zhining Liu, Wei Xiong, Ziwei Wu, Baoyu Jing, Jingrui He.
*In The 2025 Conference on Empirical Methods in Natural Language Processing **(EMNLP 2025)**.*

[6] **PageRank Bandits for Link Prediction**
Yikun Ban*, <u>Jiaru Zou</u>*, Zihao Li, Yunzhe Qi, Dongqi Fu, Jian Kang, Hanghang Tong, and Jingrui He.
*In The Thirty-Eighth Annual Conference on Neural Information Processing Systems **(NeurIPS 2024)**.*

[7] **PromptIntern: Saving Inference Costs by Internalizing Recurrent Prompt during LLM Fine-tuning**
<u>Jiaru Zou</u>, Mengyu Zhou, Tao Li, Shi Han, and Dongmei Zhang.
*In The 2024 Conference on Empirical Methods in Natural Language Processing **(EMNLP 2024)**.*

[8] **TAP4LLM: Table Provider on Sampling, Augmenting, and Packing Semi-structured Data for Large Language Model Reasoning**
Yuan Sui*, <u>Jiaru Zou</u>*, Mengyu Zhou, Xinyi He, Lun Du, Shi Han, and Dongmei Zhang.
*In The 2024 Conference on Empirical Methods in Natural Language Processing **(EMNLP 2024)**.*

[9] **CoCoST: Automatic Complex Code Generation with Online Searching and Correctness Testing**
Xinyi He, <u>Jiaru Zou</u>, Yun Lin, Mengyu Zhou, Shi Han, Zejian Yuan, and Dongmei Zhang.
*In The 2024 Conference on Empirical Methods in Natural Language Processing **(EMNLP 2024)**.*

[10] **Meta-Learning with Neural Bandit Scheduler**
Yunzhe Qi, Yikun Ban, Tianxin Wei, <u>Jiaru Zou</u>, Huaxiu Yao, and Jingrui He.
*In The 37th Annual Conference on Neural Information Processing Systems **(NeurIPS 2023)**.*

Workshop & Preprints

[1] **TaTToo: Tool-Grounded Thinking PRM for Test-Time Scaling in Tabular Reasoning**
<u>Jiaru Zou</u>, Soumya Roy, Vinay Kumar Verma, Ziyi Wang, David Wipf, Pan Lu,
Sumit Negi, James Zou, Jingrui He.
In FoRLM Workshop at NeurIPS 2025. Conference Under Review.

[2] **RAG over Tables: Hierarchical Memory Index, Multi-Stage Retrieval, and Benchmarking**
<u>Jiaru Zou</u>, Dongqi Fu, Sirui Chen, Xinrui He, Zihao Li, Yada Zhu, Jiawei Han, and Jingrui He.
Preprint. Conference Under Review.

[3] **Language in the Flow of Time: Time-Series-Paired Texts Weaved into a Unified Temporal Narrative**
Zihao Li, Xiao Lin, Zhining Liu, <u>Jiaru Zou</u>, Ziwei Wu, Lecheng Zheng, Dongqi Fu,
Yada Zhu, Hendrik Hamann, Hanghang Tong.
In BERT2S Workshop at NeurIPS 2025. Conference Under Review.

[4] **DIVERSED: Relaxed Speculative Decoding via Dynamic Ensemble Verification**
Ziyi Wang, Siva Kasa, Ankith M S, Santhosh Kasa, <u>Jiaru Zou</u>, Nan Jiang, Sumit Negi, Ruqi Zhang, Qifan Song.
In Efficient Reasoning Workshop at NeurIPS 2025. Conference Under Review.

[5] **MC-Search: Evaluating and Enhancing Multimodal Agentic Search with Structured Long Reasoning Chains**
Xuying Ning, Dongqi Fu, Tianxin Wei, Mengting Ai, <u>Jiaru Zou</u>, Ting-Wei Li, Hanghang Tong, Yada Zhu, Hendrik Hamann, Jingrui He.
In LLM Evaluation Workshop at NeurIPS 2025. Conference Under Review.

Selected Awards & Honors

Highest Honor Graduation	2024
Microsoft Stars of Tomorrow Award	2023
O. Thomas and Martha S. Purl Scholarship	2023
Daniel W. and Carol A. Dobberpuhl Student Award	2023
Illinois Engineering Outstanding & Achievement Scholarship	2023
Professor N. Narayana Rao Scholarship	2022
UIUC Edmund J. James Scholarship	2021
UIUC Dean's List	All Semesters

Community Services

Conference Program Committee/Reviewer: ARR Rolling Review, ICLR'26, AAAI'26, NeurIPS'25, ICML'25

Journal Reviewer: IEEE Transactions on Knowledge and Data Engineering (TKDE), ACM Transactions on Knowledge Discovery from Data (TKDD), ACM Computing Surveys

Student Volunteer: EMNLP'24, NeurIPS'24

School RSOs: Co-Founder & Vice President of Chinese Student & Scholar Esports Association (CSSEA), Chinese Union–Illinois Chinese Student Organization (CU-ICSO); Member of UIUC ACM, Disruption Lab, Illini Solar Car.

Teaching Experience

Graduate Teaching Assistant: UIUC CS307 (Fall 2024), UIUC CS128 (Spring 2025)	2024-2025
Course Assistant/Grader: UIUC CS/ECE374 (Head CA), ECE210, ECE310, ECE313	2021-2024

Mentorship

Mr. Jingwen Gu	Undergrad in CS, Cornell University (1 paper published in NeurIPS 2025)
Ms. Xitong Zhang	M.S. in Bioinformatics, UIUC (1 paper published in EMNLP 2025)
Mr. Feihao Fang	Undergrad in CS, UIUC (1 paper published in EMNLP 2025)

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