

XI ZHU

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RESEARCH INTERESTS

- Recommender Systems, GNN, LLMs, RAG and Agents

EDUCATION

- **Rutgers University** *New Brunswick, NJ*
- Ph.D. Student in Computer Science *2024 - 2028 (expected)*
- Advisor: Prof. Dimitris N. Metaxas
- **University of Science and Technology of China (USTC)** *Hefei, China*
- M.E. in Computer Science *2020 - 2023*
- Advisors: Prof. Enhong Chen and Prof. Tong Xu
- **Sichuan University (SCU)** *Chengdu, China*
- B.E. in Computer Science *2016 - 2020*
- Honors: Outstanding Undergraduate, National Scholarship

WORK EXPERIENCE

- **Research Scientist Intern, TikTok** *San Jose, CA*
Mentors: Dr. Shichao Zhu *May 2026 - Aug 2026*
- **Applied Scientist Intern, Amazon** *Seattle, WA*
Mentors: Dr. Yen-Liang Lin and Mr. Jayakrishnan Radhakrishnan *May 2025 - Aug 2025*
- **Research Intern, Alibaba** *Hangzhou, China*
Mentors: Dr. Xueying Li and Dr. Zhiyu Li *Dec 2021 - Nov 2023*

SELECTED PUBLICATION

LLM Agents

- [1] Towards an Incentive-Compatible Decentralized Ecosystem for the Agent Society
Xi Zhu, Zhuoqiao Shen, Ziqi Wang, Shuhang Lin, Minghao Guo, Yongfeng Zhang
- [2] HALE: Hierarchical and Auditable Skill Library Evolution for Long-Horizon LLM Agents
Ziqi Wang*, **Xi Zhu***, Bo Yang, Jiajun Fan, Kai Mei, Minghao Guo, Dimitris N. Metaxas
In Submission to the Fifteenth International Conference on Learning Representations (**ICLR 2027**).
- [3] SmellBench: Towards Fine-Grained Evaluation of Code Agents on Refactoring Tasks
Fake Lin, Binbin Hu, **Xi Zhu**, Ziwei Zhao, Zhi Zheng, Ziqi Liu, Zhiqiang Zhang, Jun Zhou, Tong Xu
In Submission to the Fifteenth International Conference on Learning Representations (**ICLR 2027**).
- [4] AEL: Agent Evolving Learning for Open-Ended Environments
Wujiang Xu, Jiaojiao Han, Minghao Guo, Kai Mei, **Xi Zhu**, Han Zhang, Dimitris N. Metaxas
In Findings of the 2026 Conference on Empirical Methods in Natural Language Processing (**EMNLP 2026**).
- [5] Concurrent Constraint Reinforcement
Bangji Yang, Hongbo Ma, Ruihan Guo, Jiajun Fan, **Xi Zhu**, Ge Liu
In Submission to the Fifteenth International Conference on Learning Representations (**ICLR 2027**).
- [6] Individual Turing Test: A Case Study of LLM-based Simulation Using Longitudinal Personal Data
Minghao Guo, Ziyi Ye, Wujiang Xu, **Xi Zhu**, Wenye Hua, Dimitris N. Metaxas
In Proceedings of the 49th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2026**).

- [7] TwinVoice: A Multi-dimensional Benchmark Towards Digital Twins via LLM Persona Simulation
Bangde Du, Minghao Guo, Songming He, Ziyi Ye, **Xi Zhu**, Weihang Su, Shuqi Zhu, Yujia Zhou, Yongfeng Zhang, Qingyao Ai, Yiqun Liu
In Findings of the 64th Annual Meeting of the Association for Computational Linguistics (**ACL 2026**).
- [8] iAgent: LLM Agent as a Shield between User and Recommender Systems
Wujiang Xu, Yunxiao Shi, Zujie Liang, Xuying Ning, Kai Mei, Kun Wang, **Xi Zhu**, Min Xu, Yongfeng Zhang
In Findings of the 63rd Annual Meeting of the Association for Computational Linguistics (**ACL 2025**).
- [9] AIOS: LLM Agent Operating System
Kai Mei, **Xi Zhu**, Wujiang Xu, Wenyue Hua, Mingyu Jin, Zelong Li, Shuyuan Xu, Ruosong Ye, Yingqiang Ge, Yongfeng Zhang
In Proceedings of the 2nd Conference on Language Modeling (**COLM 2025**).

Retrieval-Augmented Generation (RAG)

- [10] Trust or Abstain? A Self-Aware RAG Approach
Xi Zhu, Ziqi Wang, Kai Mei, Wujiang Xu, Minghao Guo, Bangji Yang, Jiajun Fan, Dimitris N. Metaxas
In Submission to the Fifteenth International Conference on Learning Representations (**ICLR 2027**).
- [11] RAGRouter-Bench: A Dataset and Benchmark for Adaptive RAG Routing
Ziqi Wang*, **Xi Zhu***, Shuhang Lin, Haochen Xue, Minghao Guo, Yongfeng Zhang
In Submission to the 3rd Conference on Language Models (**COLM 2026**).
- [12] Cache Mechanism for Agent RAG Systems
Shuhang Lin, Zhencao Peng, Lingyao Li, Xiao Lin, **Xi Zhu**, Yongfeng Zhang
In Findings of the 64th Annual Meeting of the Association for Computational Linguistics (**ACL 2026**).

Recommender Systems

- [13] Recommender Systems in the Era of Large Language Model Agents: A Survey
Xi Zhu, Yu Wang, Hang Gao, Wujiang Xu, Chen Wang, Zhiwei Liu, Kun Wang, Mingyu Jin, Linsey Pang, Qingsong Wen, Philip S. Yu, Yongfeng Zhang
In Foundations and Trends in Privacy and Security, 2025.
- [14] Multi-Behavior Recommendation with Personalized Directed Acyclic Behavior Graphs
Xi Zhu, Fake Lin, Ziwei Zhao, Tong Xu, Xiangyu Zhao, Zikai Yin, Xueying Li, Enhong Chen
In ACM Transactions on Information Systems (**ACM TOIS**), 2025.
- [15] Token-level Collaborative Alignment for LLM-based Generative Recommendation
Fake Lin, Binbin Hu, Zhi Zheng, **Xi Zhu**, Ziqi Liu, Zhiqiang Zhang, Jun Zhou, Tong Xu, Enhong Chen
In ACM Web Conference (**WWW 2026**), 2026.
- [16] Knowledge Graph Pruning for Recommendation
Fake Lin, **Xi Zhu**, Ziwei Zhao, Deqiang Huang, Yu Yu, Xueying Li, Zhi Zheng, Tong Xu, Enhong Chen
In ACM Transactions on Information Systems (**ACM TOIS**), 2025.
- [17] DynLLM: When Large Language Models meet Dynamic Graph Recommendation
Ziwei Zhao, Fake Lin, **Xi Zhu**, Zhi Zheng, Tong Xu, Shitian Shen, Xueying Li, Zikai Yin, Enhong Chen
In ACM Transactions on Information Systems (**ACM TOIS**), 2026.
- [18] When Box Meets Graph Convolutional Networks in Tag-aware Recommendation
Fake Lin, Ziwei Zhao, **Xi Zhu**, Da Zhang, Shitian Shen, Xueying Li, Tong Xu, Suojuan Zhang, Enhong Chen
In Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD 2024**).
- [19] Time-interval Aware Share Recommendation via Bi-directional Continuous Time Dynamic Graphs
Ziwei Zhao, **Xi Zhu**, Tong Xu, Aakas Lizhiyu, Yu Yu, Xueying Li, Zikai Yin, Enhong Chen
In Proceedings of the 46th International ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2023**).
- [20] H3GNN: Hybrid Hierarchical HyperGraph Neural Network for Personalized Session-based Recommendation
Zhizhuo Yin, Kai Han, Pengzi Wang, **Xi Zhu**
In ACM Transactions on Information Systems (**ACM TOIS**), 2023.

Graph Machine Learning

- [21] LLM as GNN: Graph Vocabulary Learning for Text-Attributed Graph Foundation Model
Xi Zhu, Haochen Xue, Ziwei Zhao, Wujiang Xu, Jingyuan Huang, Minghao Guo, Qifan Wang, Kaixiong Zhou, Imran Razzak, Yongfeng Zhang
In Proceedings of the 2026 Conference on Empirical Methods in Natural Language Processing (**EMNLP 2026**).
- [22] Few-shot Link Prediction for Event-based Social Networks via Meta-learning
Xi Zhu, Pengfei Luo, Ziwei Zhao, Tong Xu, Aakas Lizhiyu, Yu Yu, Xueying Li, Enhong Chen
In Proceedings of the 28th International Conference on Database Systems for Advanced Applications (**DASFAA 2023**).
- [23] Adversarial Attack and Defense on Discrete Time Dynamic Graphs
Ziwei Zhao, Yu Yang, Zikai Yin, Tong Xu, **Xi Zhu**, Fake Lin, Xueying Li, Enhong Chen
In IEEE Transactions on Knowledge and Data Engineering (**IEEE TKDE**), 2024.
- [24] Semantic Interaction Matching Network for Few-shot Knowledge Graph Completion
Pengfei Luo, **Xi Zhu**, Tong Xu, Yi Zheng, Enhong Chen
In ACM Transactions on the Web (**ACM TWEB**), 2022.

TEACHING EXPERIENCE

- **Teaching Assistant, Rutgers University** *Spring 2025 & Spring 2026*
CS527: Database Systems for Data Science
- **Teaching Assistant, Rutgers University** *Fall 2024 & Fall 2025*
CS439: Introduction to Data Science
- **Teaching Assistant, USTC** *Fall 2021*
CS11179.01: Web Information Processing and Application

SELECTED AWARDS

- The AgentX Prize for Agent Architecture *Aug 2025*
- National Scholarship of China *Dec 2019*
- Outstanding Undergraduate of SCU *Jun 2020*
- First-class Freshman Academic Scholarship of USTC *Oct 2020*
- Meritorious Winner of Mathematical Contest in Modeling (MCM), COMAP *Apr 2019*

PROFESSIONAL SERVICES

- **Reviewer:** TOIS, TKDE, TNNLS
- **PC Member:** RecSys, WWW, KDD, SIGIR, NeurIPS, EMNLP