RUOMENG DING

rmding@gatech.edu Google Scholar Github Homepage

Research Interest: Trustworthy AI, Foundation Models, and Reinforcement Learning (RL)

EDUCATION

M.S. in Computer Science, Georgia Institute of Technology **Aug, 2022 - May, 2025 (Expected)**

- GPA: 4.00/4.00, Specialization: Machine Learning.
- Both in Atlanta and Shenzhen Campus, pursuing a dual master's degree at Tianjin University. Expected to graduate with separate M.S. degrees from both institutions in May 2025.

B. Eng. in Computer Science and Technology, Tianjin University **Aug, 2018 - May, 2022**

- GPA: 3.75/4.00, Rank: 11/169 (6.5%).

RESEARCH EXPERIENCE

Research Intern, **Microsoft Research** **May, 2024 - Aug, 2024**
Advised by Dr. Minghua Ma and Dr. Ze Li Redmond, WA (Onsite)

- Focus on Large Language Model based Multi-Agents system for Incident Triage. (*1 paper in progress)*
- Responsible for methodology design, experiments, and paper writing. Present the work to both MSR and Azure teams.

Research Assistant, **University of Illinois Urbana-Champaign** **Mar, 2024 - Aug 2024**
Advised by Dr. Tong Zhang, working with Rui Yang Urbana, IL (Remote)

- Focus on enhancing the Reward Model's generalization ability against distribution shifts for Reinforcement Learning from Human Feedback (RLHF). (*NeurIPS 2024, 2nd author)*
- Responsible for literature review and RLHF experiments. Contribute to paper writing and code repository.

Research Intern, **Microsoft Research Asia** **Nov, 2022 - Aug, 2023**
Advised by Dr. Lu Wang and Dr. Chaoyun Zhang Beijing, China (Hybrid)

- Focus on Boost LLM reasoning with domain knowledge via Monte Carlo Tree Search (MCTS). Responsible for methodology design, experiments, paper writing, and code open-sourcing. (*ACL 2024, 1st author*)
- Focus on Root Cause Analysis for large-scale microservices systems, leveraging RL and RLHF to detect the root causes of anomalies. The method related to the paper has been deployed in the M365 system. (*KDD 2023, 3rd author; FSE 2023, 1st author*)

Research Assistant, **Tianjin University** **Aug, 2021 - Aug, 2022**
Advised by Dr. Minglai Shao and Dr. Wenjun Wang Tianjin, China (Onsite)

- Work on Multi-label Out-of-Distribution detection on graphs. Co-advised by Dr. Xujiang Zhao and Dr. Chen Zhao. *(UDM-AAAI 2022, 1st author)*
- Work on dynamic community detection on graphs. Responsible for part of the experiments. *(TCYB 2023)*

PUBLICATIONS

1. [ACL 2024] **R. Ding**, C. Zhang, L. Wang, Y. Xu, M. Ma, W. Zhang, S. Qin, S. Rajmohan, Q. Lin, and D. Zhang, "Everything of thoughts: Defying the law of penrose triangle for thought generation," in *Findings of the Association for Computational Linguistics (ACL)*, 2024 [paper] [code]

2. [NeurIPS 2024] . Yang, **R. Ding**, Y. Lin, H. Zhang, and T. Zhang, "Regularizing hidden states enables learning generalizable reward model for LLMs," in *The Thirty-eighth Annual Conference on Neural Information Processing Systems (NeurIPS)*, 2024 [paper] [code]

3. [FSE 2023] **R. Ding**, C. Zhang, L. Wang, Y. Xu, M. Ma, X. Wu, M. Zhang, Q. Chen, X. Gao, X. Gao, H. Fan, S. Rajmohan, Q. Lin, and D. Zhang, "Tracediag: Adaptive, interpretable, and efficient root cause analysis on large-scale microservice systems," in *Proceedings of the 31st ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE)*, 2023 [paper] [slides]

4. [KDD 2023] . Wang, C. Zhang, **R. Ding**, Y. Xu, Q. Chen, W. Zou, Q. Chen, M. Zhang, X. Gao, H. Fan, S. Rajmohan, Q. Lin, and D. Zhang, "Root cause analysis for microservice systems via hierarchical reinforcement learning from human feedback," in *Proceedings of the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)*, 2023 [paper]

5. [UDM-AAAI 2023] **R. Ding**, X. Zhao, C. Zhao, and M. Shao, "Detecting multi-label out-of-distribution nodes on graphs," in *AAAI Workshop on Uncertainty Reasoning and Quantification in Decision Making*, 2023 [paper]

6. [VLDB 2023] . Chen, C. Zhang, M. Ma, Y. Liu, **R. Ding**, B. Li, S. He, S. Rajmohan, Q. Lin, and D. Zhang, "Imdiffusion: Imputed diffusion models for multivariate time series anomaly detection," in *Proceedings of the VLDB Endowment (VLDB)*, 2023 [paper]

7. [TCYB 2023] . Li, W. Wang, P. Jiao, Y. Wang, **R. Ding**, H. Wu, L. Pan, and D. Jin, "Exploring temporal community structure via network embedding," in *IEEE Transactions on Cybernetics (TCYB)*, 2023 [paper]

HONORS AND FELLOWSHIPS

2023	**National Scholarship**, **TOP 1%**, Tianjin University	Tianjin, China
2022	**Merit Scholarship**, **TOP 5%**, Georgia Institute of Technology (Shenzhen Campus)	Shenzhen, China
2020	**People's Scholarship**, **TOP 1%**, Tianjin University	Tianjin, China
2019	**Merit Scholarship**, **TOP 5%**, Tianjin University	Tianjin, China

SERVICES

- Reviewer, ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2024
- Reviewer, KDD Workshop on Uncertainty Reasoning and Quantification in Decision Making (UDM-KDD), 2023
- Reviewer, Journal of Information Processing and Management, 2023

COLLABORATION

I am fortunate to have collaborations with researchers/professors from both industry and academia:

Dr. Chaoyun Zhang, Dr. Lu Wang @Microsoft Research Asia Dr. Minghua Ma @Microsoft Research
Dr. Xujiang Zhao, Dr. Wei Cheng @NEC Laboratories America
Dr. Tong Zhang @ UIUC Dr. Chao Zhang @ GaTech Dr. Chen Zhao @Baylor University
Dr. Minglai Shao, Dr. Wenjun Wang @Tianjin University