Xiangqi (Shawn) Wang

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SUMMARY

PhD student in Computer Science at the University of Notre Dame, focusing on reinforcement learning and trustworthy reasoning of large language models. Experienced in causal inference, bandit algorithms, and large-scale multi-agent simulation, with multiple first-author publications (NeurIPS Spotlight, TMLR, WSDM, etc).

EDUCATION & EXPERIENCES

University of Notre Dame **South Bend, IN, USA**
PhD Student in CSE under mentorship of Dr. Xiangliang Zhang. *Sep. 2024 - Present*

University of Science and Technology of China **Hefei, China**
B.Sc in CS major graduated with first class honor from School of the Gifted Young *Sep. 2020 - June 2024*

Previously, I was fortunate to be advised by Prof. Qi Liu (USTC), remotely supervised by Prof. Huazheng Wang and Prof. Jian Kang, and conducted causal inference research mentored by Prof. Zhuoran Yang.

TECHNICAL SKILLS & RESEARCH INTERESTS

Research Interest: Reinforcement Learning, Trustworthy LLM Reasoning, Causal Inference, Bandit Algorithm
Libraries and Tools: Verl, PyTorch, Llamafactory, transformer, Git, Docker, contextual bandit

FIRST AUTHOR PUBLICATIONS

Causally-Enhanced Reinforcement Policy Optimization

X. Wang, Y. Huang, Y. Zhou, X. Luo, K. Guo, X. Zhang
Under review; arXiv

- Proposed CE-RPO/CE-GRPO to address shortcut learning and reward-hacking in RL for LLMs by fusing task accuracy with causal-coherence signals; introduced Jacobian-based influence with counterfactual hardening and a Minkowski power-mean combiner.
- Built the PPO/GRPO training stack end-to-end, and led large-scale evaluations showing consistent accuracy and robustness gains.

AdaReasoner: Adaptive Reasoning Enables More Flexible Thinking of Large Language Models

X. Wang, Y. Huang, Y. Wang, X. Luo, K. Guo, Y. Zhou, X. Zhang
NeurIPS 2025 Spotlight; arXiv

- Introduced an few-shot adaptive controller that tunes temperature and reasoning prompt by task features; trained via RL with a factorized action space and Boltzmann exploration.
- Delivered theory-backed fast convergence with a sublinear policy gap and consistent gains across six LLMs on diverse reasoning suites; improved OOD robustness with an LLM-agnostic, plug-and-play controller.

Fair Online Influence Maximization

X. Wang, S. Zhang, J. Escamilla, Q. Wu, X. Zhang, J. Kang, H. Wang
Transactions on Machine Learning Research (TMLR), 2025 OpenReview

- Designed fairness-aware combinatorial multi-arm contextual bandits for online influence maximization with demographic coverage constraints; proved sublinear regret.
- Built scalable solvers and validated on public graphs (e.g., Pokec); contributed extensive online RL experiments.

WildlifeLookup: A Chatbot Facilitating Wildlife Management with Accessible Data and Insights

X. Wang, T. Yang, J. Rohr, B. Scheffers, N. Chawla, X. Zhang
ACM International Conference on Web Search and Data Mining (WSDM) 2025 DOI

- Constructed a national wildlife observation knowledge graph and a natural-language chatbot for species–habitat–policy queries using multimodal graph RAG technique. Chatbot exhibits expert level performance on AI4Science specific questions.
- Working as major contributor under NSF funded project.

PUBLICATIONS INVOVLED

- Y. Huang, J. Ye, Z. Liu, Y. Li, **X. Wang**, Y. Hao, Y. Zhou, K. Guo, X. Chen, Y. Zhao, X. Zhang. "ValueLence: A Dashboard for In-Depth Value Probing of LLMs," *Under review* — Contributed in pipeline. Link
- Y. Wang, Z. Xu, Y. Huang, **X. Wang**, Z. Song, L. Gao, C. Wang, X. Tang, Y. Zhao, A. Cohan, X. Zhang, X. Chen. "DyFlow: Dynamic Workflow Framework for Agentic Reasoning," *NeurIPS*, 2025 — Co-developed dynamic workflow for tool/agent reasoning with theoretical guarantee Link
- C. Gao, Y. Huang, **X. Wang**, S. Wu, N. Chawla, X. Zhang. "Think it Image by Image: Multi-Image Moral Reasoning of Large Vision–Language Models," *ACM CIKM*, 2025 — Contributed to manuscript writing. Link
- Y. Huang, Z. Yuan, Y. Zhou, K. Guo, **X. Wang**, H. Zhuang, W. Sun, L. Sun, *et al.* "Social Science Meets NLP: Assessing Reliability of Language Processing Models in Social Simulations," *COLM*, 2025 — Designed simulation scenarios (Python), built reliability metrics, drafted results analysis. Link
- Y. Huang, C. Gao, S. Wu, H. Wang, **X. Wang**, Y. Zhou, Y. Wang, J. Ye, J. Shi, *et al.* "Trustworthiness of Generative Models for Natural Language Processing: Guidelines, Assessment, and Perspective," *arXiv:2502.14296*, 2025 Co-developed assessment framework, ran large-scale experiments, co-wrote methodology & discussion. Link
- H. Bao, Y. Huang, Y. Wang, J. Ye, **X. Wang**, X. Chen, Y. Zhao, T. Zhou, *et al.* "AutoBench-V: Self-Evaluation Framework for Vision–Language Processing," *arXiv:2410.21259*, 2024 — Implemented automated test-generation pipeline, integrated metrics, authored system architecture. Link
- T. Yang, L. Dai, Z. Liu, **X. Wang**, M. Jiang, Y. Tian, X. Zhang. "CLIPErase: Efficient Unlearning of Visual–Textual Associations in CLIP," *ACL*, 2025 — Contributed in figure plotting and code construction. Link

ACADEMIC PARTICIPATION

- **Journal Reviewer** TMLR 2025, IEEE Transactions on Computational Social Systems, IEEE NASC Competition holder.
- **Conference Reviewer** ICLR 2026, NeurIPS 2025, WWW 2025, KDD 2024

HONORS & AWARDS

NSF DISCOVER ACCESS Project (2025); OpenAI Researcher Access Program (2025); Chinese Mathematics Competition — Provincial First Prize (2022); ICPC China Regional — Prize Award (2021). Yearly Outstanding Student of USTC; Nominated for SGY 87–00 Scholarship.

TOOLKITS & PROJECTS

Knowledge Network of Wildlife — Query Website kn-wildlife.crc.nd.edu: Contributor; built the searchable web interface for the wildlife knowledge network and integrated curated resources.

CausalRL (VERL modification) github.com/XiangqiWang77/causalrl: Modified VERL with *Jacobian Causal Scores* and a parallel-thread reward background to accelerate policy/reward updates.

AdaReasoner — official implementation github.com/XiangqiWang77/officialadareasoner: Implementation of *AdaReasoner*; modular reasoning pipeline and reproducible training/inference scripts.

FOIM codebase github.com/wangxiangqi/Fair_IM_new: FOIM project codebase; cleaned APIs, experiments, and evaluation pipeline.

Prototype Open Knowledge Network (Proto-OKN) proto-okn.net: Project participant; contributed to data/knowledge integration and applications on the open knowledge network.

TALKS & PRESENTATION

Attended: NSF Proto-OKN Annual Meeting; SASC Symposium (ecologists feedback collection, cross-domain collaboration); ACM WSDM Tutorial; EMNLP 2024; the third Reinforcement Learning Conference (remote).

TEACHING & MENTORSHIP

Teaching Assistant: Machine Learning (Graduate), University of Notre Dame; Computer Programming A (USTC, Prof. Xuefei Bai); Data Analysis and Practice (USTC, Prof. Qi Liu).