

Wanghan Xu

Curriculum Vitae

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Education

- 2024.09- **PhD**, Information and Communication Technology, Shanghai Jiao Tong University. Research Present Topics: LLMs, Agents, [AI Scientists](#), Generative AI. Supervised by Prof. [Wanli Ouyang](#).
- 2020.09- **Bachelor** of Computer Science and Technology, Xi'an Jiaotong University.
- 2024.06 GPA: **100.01**(94.01+6)/100, Rank: [1/196](#), Awarded as **top ten** outstanding student.

Core Publications

- 2025 **Wanghan Xu**, Yuhao Zhou, Yifan Zhou, Qinglong Cao, Shuo Li, Jia Bu ... (107 authors). *Probing Scientific General Intelligence of LLMs with Scientist-Aligned Workflows* [Link](#)
- 2025 Tao Han, **Wanghan Xu**, Junchao Gong, Xiaoyu Yue, Song Guo, Luping Zhou, Lei Bai. *InfGen: A Resolution-Agnostic Paradigm for Scalable Image Synthesis* ([ICCV 2025 Accept](#)) [Link](#)
- 2025 Xiangru Tang*, **Wanghan Xu***, Yujie Wang*, Zijie Guo*, Daniel Shao, Jiapeng Chen, Cixuan Zhang, Ziyi Wang, Lixin Zhang, Guancheng Wan, Wenlong Zhang, Lei Bai, Zhenfei Yin, Philip Torr, Hanrui Wang, Di Jin. *Eigen-1: Adaptive Multi-Agent Refinement with Monitor-Based RAG for Scientific Reasoning* ([ICLR 2026 Under Review](#)) [Link](#)
- 2025 Ming Hu, Chenglong Ma, Wei Li, **Wanghan Xu**, Jiamin Wu, Jucheng Hu, Tianbin Li, Guohang Zhuang, Jiaqi Liu ... (103 authors). *A survey of scientific large language models: From data foundations to agent frontiers* [Link](#)
- 2025 **Wanghan Xu**, Wenlong Zhang, Fenghua Ling, Ben Fei, Yusong Hu, Fangxuan Ren, Jintai Lin, Wanli Ouyang, Lei Bai. *Manalyzer: End-to-end Automated Meta-analysis with Multi-agent System* [Link](#)
- 2025 **Wanghan Xu**, Xiangyu Zhao, Yuhao Zhou, Xiaoyu Yue, Ben Fei, Fenghua Ling, Wenlong Zhang, Lei Bai. *EarthSE: A Benchmark Evaluating Earth Scientific Exploration Capability for Large Language Models* [Link](#)
- 2025 Xiangyu Zhao*, **Wanghan Xu***, Bo Liu, Yuhao Zhou, Fenghua Ling, Ben Fei, Xiaoyu Yue, Lei Bai, Wenlong Zhang, Xiao-Ming Wu. *MSEarth: A Benchmark for Multimodal Scientific Comprehension of Earth Science* [Link](#)
- 2025 **Wanghan Xu**, Xiaoyu Yue, Zidong Wang, Yao Teng, Wenlong Zhang, Xihui Liu, Luping Zhou, Wanli Ouyang, Lei Bai. *Exploring Representation-Aligned Latent Space for Better Generation* [Link](#)
- 2024 **Wanghan Xu**, Fenghua Ling, Wenlong Zhang, Tao Han, Hao Chen, Wanli Ouyang, Lei Bai. *Generalizing Weather Forecast to Fine-grained Temporal Scales via Physics-AI Hybrid Modeling* ([NeurIPS 2024 Accept](#)) [Link](#)
- 2024 **Wanghan Xu**, Kang Chen, Tao Han, Hao Chen, Wanli Ouyang, Lei Bai. *ExtremeCast: Boosting Extreme Value Prediction for Global Weather Forecast* [Link](#)
- 2024 Junchao Gong, Lei Bai, Peng Ye, **Wanghan Xu**, Na Liu, Jianhua Dai, Xiaokang Yang, Wanli Ouyang. *CasCast: Skillful High-resolution Precipitation Nowcasting via Cascaded Modelling* ([ICML 2024 Accept](#)) [Link](#)
- 2023 **Wanghan Xu**. *Is 3-(F)WL Enough to Distinguish All 3D Graphs?* [Link](#)

- 2023 **Wanghan Xu**, Bin Shi, Ao Liu, Jiqiang Zhang, Bo Dong. *GraphPub: Generation of Differential Privacy Graph with High Availability* [Link](#)
- 2023 **Wanghan Xu**, Bin Shi, Jiqiang Zhang, Zhiyuan Feng, Tianze Pan, Bo Dong. *MDP: Privacy-Preserving GNN Based on Matrix Decomposition and Differential Privacy* ([IEEE JCC 2023 Accept](#)) [Link](#)

Collaborative Publications

- 2025 *SciEvalKit: An Open-source Evaluation Toolkit for Scientific General Intelligence* [Link](#)
- 2025 *Earth-agent: Unlocking the full landscape of earth observation with agents* ([ICLR 2026 Under Review](#)) [Link](#)
- 2025 *Intern-s1: A scientific multimodal foundation model* [Link](#)
- 2025 *EarthLink: A Self-Evolving AI Agent for Climate Science* [Link](#)
- 2025 *Align-DA: Align Score-based Atmospheric Data Assimilation with Multiple Preferences* ([NeurIPS 2025 Accept](#)) [Link](#)
- 2025 *DAWP: A framework for global observation forecasting via Data Assimilation and Weather Prediction in satellite observation space* ([NeurIPS 2025 Accept](#)) [Link](#)
- 2025 *LO-SDA: Latent Optimization for Score-based Atmospheric Data Assimilation* [Link](#)
- 2024 *WEATHER-5K: A Large-scale Global Station Weather Dataset Towards Comprehensive Time-series Forecasting Benchmark* [Link](#)
- 2024 *CRA5: Extreme Compression of ERA5 for Portable Global Climate and Weather Research via an Efficient Variational Transformer* ([npj Under Review](#)) [Link](#)

Selected Ongoing Projects

- 2025 **Critic-R1: A Unified Reflective Critic Model in Complex Reasoning**
Ongoing **Abstract:** We introduce Critic-R1, an RL-trained critic model that detects and corrects reasoning errors in LLMs. By learning to evaluate intermediate steps and generate targeted revisions, Critic-R1 reliably boosts complex problem-solving performance across diverse tasks.

Internship Experience

- 2023.07- **Shanghai AI Lab. Shanghai, China.**
Present Research Topics: AI for Science, Physics-informed ML, Generation
- 2022.03- **Shaanxi Provincial Key Laboratory of Tiandi Network Technology.**
2023.06 Research Topics: Graph Neural Networks

Awards & Honors

- 2023 Top Ten Outstanding Student Models of Xi'an Jiaotong University
2023 American Mathematical Contest in Modeling (MCM/ICM) Finalist
2023 China Scientist Scholarship (20,000 ¥)
2022 National Scholarship
2022 RoboCup Robot World Cup China First Prize
2021 National Mathematical Contest in Modeling Shaanxi First Prize
2021 National College Mathematics Competition Shaanxi Province First Prize
2021 Xi'an Jiaotong University First Prize Scholarship

Recommendation Letter

- 2023 Prof. [Wanli Ouyang](#), Professor at the Chinese University of Hong Kong, Leading Scientist (领军科学家) at the Shanghai Artificial Intelligence Laboratory. [Link](#)
Prof. [Qinghua Zheng](#), Academician of the Chinese Academy of Engineering (中国工程院院士), President of Tongji University. [Link](#)