Wenbin Wang, Master.

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Research Interest

My research lies at the intersection of machine learning, statistics, and optimization, with a focus on the theoretical foundations of large language models and the development of AI algorithms for large-scale and multiagent decision-making. I am particularly interested in understanding the mechanisms of large language models, including their training and prompting processes, and leveraging these insights for applications like decisionmaking. Recently, my work has focused on reinforcement learning from human feedback (RLHF) and the mathematical foundations of reinforcement learning.

Education

09/2023 - 06/2026	M.Eng. Engineering	Computer Science and Technology
	Advisor: Prof. Ziping Zhao & Prof	. Xavier Lagorce ShanghaiTech University
09/2018 - 06/2022	B.Econ. Economics	Economic Statistics
	Advisor: Prof. Zeyu Zhang	Huazhong Agricultural University

Professional Experience

07/2024 - 09/2024	Research Intern (remote) Worked on federated unlearning.	Duke University Advised by Prof. Minghong Fang
04/2023 - 08/2023	Visiting Student Worked on compressed sensing.	ShanghaiTech University Advised by Prof. Ziping Zhao
09/2022 - 03/2023	Research Intern (remote) Worked on 3D Reconstruction.	KU Leuven University Advised by Dr. Xueyang Kang

Research Publications

Journal Articles

W. Wang^{*}, Q. Ma^{*}, Z. Zhang, Y. Liu, Z. Liu, and M. Fang, "Federated unlearning under attack: Poisoning threats and defensive strategies", *Submitted to IEEE Trans. Inf. Forensics Security*, 2025, Under review.

Conference Proceedings

- **W. Wang**, Y. Shi, and Z. Zhao, "High-dimensional tensor regression with oracle properties", in *Proc. The International Conference on Machine Learning (ICML)*, 2025. [Paper].
- **2** W. Wang and Z. Zhao, "Achieving oracle rate for large covariance matrix estimation from quadratic measurements", in *Proc. IEEE International Symposium on Information Theory (ISIT)*, 2025.
- **W. Wang** and Z. Zhao, "Optimal compressive covariance sketching via rank-one sampling", in *Proc. The Int. Conf. Sampling Theory Appli. (SampTA)*, 2025. [Paper].
- **W. Wang**^{*}, Q. Ma^{*}, Z. Zhang, Y. Liu, Z. Liu, and M. Fang, "Poisoning attacks and defenses to federated unlearning", in *Proc. The Web Conference (WWW)*, 2025. [Paper].

Preprint

W. Wang, Z. Jing, Y. Shi, and Z. Zhao, "Low-rank covariance matrix estimation from quadratic measurements".

2 W. Wang, J. Zhang, Y. Yan, J. Zeng, and Z. Zhao, "Achieving oracle statistical property for low-rank matrix recovery with application to image denoising".

W. Wang and Z. Zhao, "Accelerating graph analytics via bilinear sketching".

W. Wang and Z. Zhao, "Compressive covariance matrix sensing via quadratic sampling based on nonconvex learning".

W. Wang and Z. Zhao, "Large low-rank covariance matrix estimation with oracle rate via majorization-minimization".

W. Wang^{*} and H. Wang^{*}, "Robust constrained reinforcement learning with linear function approximation", Submitted to Neural Information Processing Systems (NeurIPS) 2025.

Skills

Strong reading, writing and speaking competencies for English, Mandarin Chinese.
C/C++, Python, R, LATEX, Tensorflow, Pytorch, MATLAB.
Git, Docker, Visual Studio Code, Jupyter Notebook, Linux Shell.
Academic research, teaching, training, Large typesetting and publishing.

Miscellaneous Experience

Awards and Achievements

2025	IEEE ISIT Travel Grant Award	
2022	Outstanding Graduate , College of Economics and Management, Huazhong Agricultural University.	
2020	First Prize , Hubei Provincial Division, Contemporary Undergraduate Mathematical Contest in Modeling (CUMCM).	
	Practical Innovation Award , College of Economics and Management, Huazhong Agri- cultural University.	
	Academic Progress Award, College of Economics and Management, Huazhong Agri- cultural University.	
	Second Prize, 10th MathorCup College Mathematical Modeling Challenge.	
	First Prize, 17th May 1st Mathematical Contest in Modeling.	
	Second Prize , 13th "Certification Cup" National Undergraduate Mathematical Modeling Challenge.	
2019	Merit Student Award, Huazhong Agricultural University.	
Teaching		
Fall 2024	Teaching Assistant. CS182: Introduction to Machine Learning.	

Spring 2025 **Teaching Assistant**. SI231B: Matrix Computations.

Professional Activity

2025

Conference Reviewer. ICASSP2025.