ZIHAO WANG

zihaow@stanford.edu, Google Scholar

SHORT BIO

I am a Ph.D. student at Stanford Mathematics. I am fortunately advised by Prof. Andrea Montanari.

I also work closely with Prof. Jason D. Lee.

Previously I was an undergrad student at Peking University. I was fortunate to be advised by Prof. Jason D. Lee and Prof. Lei Wu for my undergraduate research.

EDUCATION

Stanford University — Stanford, CA, USA
Ph.D. student — *2024.9-Present*
Advisor: Prof. Andrea Montanari

Peking University — Beijing, China
Undergrad student — *2020.9-2024.6*
Advisor: Prof. Lei Wu

SELECTED EXPERIENCES

Simons Institute — Berkeley, CA, USA
Participant in deep learning theory workshop (invitation only) — *2025.2*

Princeton University — Princeton, NJ, USA
Visiting student — *2023.6-2023.9*
Mentor: Prof. Jason D. Lee

RESEARCH INTERESTS

Theory and algorithms for modern statistics and machine learning problems.

PUBLICATIONS & PREPRINTS

* indicates equal contribution or alphabetical author order.

7. Andrea Montanari*, **Zihao Wang***: Phase Transitions for Feature Learning in Neural Networks. In preparation. Draft available upon request.
6. Bohan Zhang*, **Zihao Wang***, Hengyu Fu, Jason D. Lee: Neural Networks Learn Generic Multi-Index Models near Information-Theoretic Limit. *arXiv preprint arXiv:2511.15120, 2025.* **Submitted to ICLR 2026.** [paper]
5. Fan Nie*, Ken Ziyu Liu*, **Zihao Wang**, Rui Sun, Wei Liu, Weijia Shi, Huaxiu Yao, Linjun Zhang, Andrew Y. Ng, James Zou, Sanmi Koyejo, Yejin Choi, Percy Liang, Niklas Muennighoff*: UQ: Assessing Language Models on Unsolved Questions. *arXiv preprint arXiv:2508.17580, 2025.* **NeurIPS 2025 LLM Evaluation Workshop. Neurips 2025 FoRLM Workshop. Submitted to ICLR 2026.** [paper]
4. Hengyu Fu, **Zihao Wang**, Eshaan Nichani and Jason Lee: Learning Hierarchical Polynomials of Multiple Nonlinear Features with Three-Layer Networks. *arXiv preprint arXiv:2411.17201, 2024.* **ICLR 2025.** [paper]
3. Kaizhao Liu*, **Zihao Wang*** and Lei Wu: The Local Landscape of Phase Retrieval Under Limited Samples. *arXiv preprint arXiv:2311.15221, 2023.* **IEEE Transactions on Information Theory.** [paper]
2. **Zihao Wang**, Eshaan Nichani and Jason Lee: Learning Hierarchical Polynomials with Three-Layer Neural Networks. *arXiv preprint arXiv:2311.13774, 2023.* **ICLR 2024**. [paper]

1. **Zihao Wang** and Lei Wu: Theoretical Analysis of the Inductive Biases in Deep Convolutional Networks. *arXiv preprint arXiv:2305.08404, 2023.* **Neurips 2023**. [paper]

SELECTED AWARDS & HONOURS

Weiming Scholar, Peking University	*June 2024*
Excellent Graduate of the School of Mathematical Sciences, Peking University	*June 2024*
Francis Robbins Upton Fellowship (declined), Princeton University	*February 2024*
Zheng Ge Ru Scholarship, Peking University	*October 2023*
Model Student of Academic Records of Peking University	*October 2023*
The elite undergraduate training program of applied mathematics and statistics, Peking University	*2022 - 2024*
Second Class Scholarship of Peking University	*October 2021*
Merit Student of Peking University	*October 2021*

INVITED TALKS

[6,7] ML theory reading group, Tsinghua University	*December 2025*
[1]. 3+X seminar, Peking University	*December 2022*

PROFESSIONAL SERVICE

Conference Reviewer: Neurips 2023, ICLR 2024, AISTATS 2024, ICML 2024, ICLR 2025, ICML 2025, Neurips 2025.

Journal Reviewer: Communications in Mathematical Sciences, Annals of Applied Probability.

TEACHING ASSISTANT

STATS219 Stochastic Processes	*Autumn 2025*
MATH20 Calculus	*Spring 2025*
STATS219 Stochastic Processes	*Autumn 2024*