

Facheng Yu

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EDUCATION

University of Washington, Seattle

Ph.D. in Statistics (Expected 2028)

M.S. in Statistics (2025)

Advisor: Zaid Harchaoui

Research Interests: Machine Learning, Causal Inference, Core AI, and AI Domain Applications

Coursework: Statistical Inference, Statistical Learning, Advanced Probability, Convex Optimization, Regression Methods

SKILLS

Programming: Python (NumPy, PyTorch, scikit-learn, Pandas), R, C++, SQL.

Techniques: Machine Learning, Causal Inference, Optimization, High-Dimensional Statistics.

Tools: Git, LaTeX.

RESEARCH EXPERIENCE

University of Washington, Seattle

Graduate Student Researcher

Advisors: Zaid Harchaoui and Alex Luedtke

Project: LLM-based Privacy-Preserving Authorship Obfuscation

Sep. 2025–Present

- Developed a pipeline in PyTorch for authorship obfuscation in Chinese with fine-grained control over stylistic features such as usage of sarcasm, word lengths, sentence lengths, frequency of function words.
- Evaluated the LLM performance with different decoding strategies such as greedy, top-k, top-p, and mixed strategies etc.

Project: The Benefit of Balancing with Known Marginals for Multimodality

Sep. 2025–Present

- Generalized a multi-CLIP loss for n modalities as one step of balancing using known marginal distributions of each modality.
- Proposed an iterative algorithm that reduces the estimation variance of the multi-CLIP minimizer and performed experiments on three modalities (text, video, audio) in PyTorch.

Project: Stochastic Gradients under Nuisances

Jun. 2024–Dec. 2025

- Investigated stochastic gradient algorithms for optimizing objectives with unknown nuisance parameters, with applications in high-dimensional inference and causal learning.
- Applied **Neyman orthogonality** to mitigate the bias introduced from nuisance estimation, enabling more reliable gradient-based optimization.
- Designed and implemented an approximately **orthogonalized gradient oracle** to debias learning for non-orthogonal objectives.
- Developed [OSGD](#) (Python library) to implement orthogonalized stochastic gradients for partially linear models (PLM), achieving improved risk consistency (~ 0.001) with ~ 0.1 nuisance error and ~ 0.5 operator error compared to standard SGD.

Renmin University of China, Beijing, China

Undergraduate Student Researcher

Advisor: Yuqian Zhang

Project: Data Integration Using Covariate Summaries from External Sources

May 2023–Jun. 2024

- Designed robust mean outcome estimators under both homogeneous and heterogeneous data settings.
- Extended our integration methods to estimate treatment effects for improved **generalizability** and **transportability**.
- Conducted extensive simulations in R, demonstrating strong robustness to model misspecification and improved accuracy over baseline methods (e.g., DoubleML).

PUBLICATIONS

[1] F. Yu, R. Mehta, A. Luedtke, and Z. Harchaoui, "[Stochastic Gradients under Nuisances](#)", *NeurIPS* 2025.

[2] F. Yu and Y. Zhang, "[Data Integration Using Covariate Summaries from External Sources](#)", *arXiv:2411.15691*.

SCHOLARSHIPS AND AWARDS

- Institute for Foundations of Data Science (IFDS) Scholarship, 2024.
- Third Prize in Asia and Pacific Mathematical Contest in Modeling, 2022.
- Excellent Student Scholarship, Wuhan University, 2020, 2021, 2022.