

Yujia Wang

Pronouns: She/Her/Hers

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Research Vision and Interests

My ultimate goal is to build the **next generation of collaborative intelligence systems**. Just as the internet protocol reshaped how information is shared, my research leverages advanced optimization theory to construct foundational infrastructure for collaborative learning. This will guide massive AI edge devices to develop collaboratively in an efficient and trustworthy manner, ultimately fostering a unified, principled, and intelligent future aligned with human values.

My primary research interests include theories and applications of **collaborative** and **privacy-preserving machine learning** and **optimization**. Currently, my research focuses on:

- Efficient and scalable federated learning in heterogeneous networks
- Generative methodologies in federated and collaborative learning
- Optimization methods tailored for the era of generative AI

Education

The Pennsylvania State University Ph.D. in Informatics, College of Information Sciences and Technology <i>Advisor: Dr. Jinghui Chen</i>	PA, USA 2022.01-Present
University of Michigan M.S. in Applied Statistics, Department of Statistics	MI, USA 2019.08-2021.05
Sichuan University B.S. in Statistics, College of Mathematics	Chengdu, China 2015.09-2019.06

Publications

(* indicates equal contribution)

Peer-reviewed Conference Publications

1. Xin Yu, **Yujia Wang**, Jinghui Chen and Lingzhou Xue. AltLoRA: Towards Better Gradient Approximation in Low-Rank Adaptation with Alternating Projections. In *Proceedings of the 39th Annual Conference on Neural Information Processing Systems*. (**NeurIPS 2025**)
2. Yurui Chang*, Bochuan Cao*, **Yujia Wang**, Jinghui Chen and Lu Lin. JoPA: Explaining Large Language Model's Generation via Joint Prompt Attribution. In *The 63rd Annual Meeting of the Association for Computational Linguistics, 2025*. (**ACL Main 2025**)
3. **Yujia Wang**, Shiqiang Wang, Songtao Lu and Jinghui Chen. FADAS: Towards Federated Adaptive Asynchronous Optimization. In *Proceedings of the 41st International Conference on Machine Learning, Vienna, Austria, 2024*. (**ICML 2024**)

4. **Yujia Wang**, Yuanpu Cao, Jingcheng Wu, Ruoyu Chen, and Jinghui Chen. Tackling the Data Heterogeneity in Asynchronous Federated Learning with Cached Update Calibration. In *Proceedings of the 12th International Conference on Learning Representations*, Vienna, Austria, 2024. (**ICLR 2024**)
5. **Yujia Wang**, Lu Lin, and Jinghui Chen. Communication-Efficient Adaptive Federated Learning. In *Proceedings of the 39th International Conference on Machine Learning*, Baltimore, Maryland, USA, 2022. (**ICML 2022**, [100+ citations](#))
6. **Yujia Wang**, Lu Lin, and Jinghui Chen. Communication-Compressed Adaptive Gradient Method for Distributed Nonconvex Optimization. In *Proceedings of the 25th International Conference on Artificial Intelligence and Statistics*, Virtual, 2022. (**AISTATS 2022**)
(A short version of this paper also appears on *International Workshop on Trustable, Verifiable and Auditable Federated Learning in Conjunction with AAAI 2022 (FL-AAAI-22)*.)

Journal Publications

7. **Yujia Wang**, and Jinghui Chen. On the Data Heterogeneity in Adaptive Federated Learning. In *Transactions on Machine Learning Research*, 2024. (**TMLR**)

Under Reviews

8. **Yujia Wang**, Fenglong Ma, and Jinghui Chen. Stragglers Can Contribute More: Uncertainty-Aware Distillation for Asynchronous Federated Learning. *Submitted*.
9. **Yujia Wang**, Yuanpu Cao, and Jinghui Chen. ParaBlock: Communication-Computation Parallel Block Coordinate Federated Learning for Large Language Models. *Submitted*.
10. Tiejun Chen*, Yuanpu Cao*, **Yujia Wang***, Cho-Jui Hsieh, and Jinghui Chen. Federated Learning with Projected Trajectory Regularization. *Submitted*.

Peer-reviewed Workshop Papers

11. **Yujia Wang**, Pei Fang, and Jinghui Chen. Accelerating Adaptive Federated Optimization with Local Gossip Communications. In *International Workshop on Federated Learning: Recent Advances and New Challenges, NeurIPS 2022*.

Grant Preparation

III: Small: Towards Efficient Adaptive Federated Learning: Algorithms, Theories, and Applications, National Science Foundation (PIs: Jinghui Chen and Fenglong Ma), \$599,096, 2024-2027.

Contribution: Assisted Prof. Jinghui Chen in writing the grant proposal

Research Experiences

IBM Research – Almaden

Research Intern

Mentor: Dr. Swanand R. Kadhe

CA, USA

2025.05-2025.08

The Pennsylvania State University

Research Assistant

Advisor: Dr. Jinghui Chen

PA, USA

2022.01-Present

The Pennsylvania State University
Research Intern
Advisor: Dr. Jinghui Chen

PA, USA
2021.06-2021.12

University of Michigan
Research Assistant
Advisor: Dr. Bing Zhou

MI, USA
2020.07-2020.12

Sichuan University
Research Intern
Advisor: Dr. Zechun Hu

Chengdu, China
2018.03-2018.12

Awards & Honors

SDM Travel Award (2024)
IST Graduate Student Travel Award (2022)
ICML Travel Grant (2022)
Outstanding Project of Students' Platform for Innovation and Entrepreneurship Training Program of Sichuan University (2018)
National Collegiate Mathematics Competition (Second Prize of Sichuan Province, 2017)
Several awards and scholarships, Sichuan University (2015-2019)

Mentoring Experience

Durva Bharatbhushan Dev

M.Sc., at Penn State University

Spring 2025-Present

Topic: Optimization for Large Language Models

Jingcheng Wu

M.Sc., at Carnegie Mellon University

Spring 2023-Fall 2023

Currently at Google

Topic: Asynchronous Federated Learning

Ruoyu Chen

M.Sc., at Carnegie Mellon University

Spring 2023-Fall 2023

Currently at Observe, Inc.

Topic: Asynchronous Federated Learning

Presentations

Minisymposium Talk, SIAM New York-New Jersey-Pennsylvania Section Conference, Penn State University, 2025

Data Engineering Tech Talks, IBM Research, 2025

Poster presentation at SDM 2024 Doctoral Forum

Poster presentation at AI Week Poster Session, Penn State University, 2024

Poster presentation at conferences: AISTATS 2022, ICML 2022

Oral presentation at workshop: FL-AAAI 2022

Services

Conference Reviewer for: ICML 2022, 2024, 2025; NeurIPS 2024, 2025; KDD 2022, 2024, 2025; BigData 2023; KDD PhD Consortium 2023; AAAI 2023, 2024, 2025; ECCV 2024; CVPR 2025

Journal Reviewer for TMLR; JAIR; TMC; TNSE

Conference Volunteer for AISTATS 2022; ICML 2022

IST590 colloquium guest speaker for 2023, 2025

Teaching Experiences

Teaching Assistant for SRA 221: Overview of Information Security

The Pennsylvania State University; Spring 2023, Spring 2024

Teaching Assistant for DS 310: Machine Learning for Data Analytics

The Pennsylvania State University; Fall 2023