Yifan Yang

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Education

State University of New York at Buffalo Jan 2023 - Present
Ph.D. in Computer Science and Engineering *Buffalo, New Yrok*

University of Illinois at Urbana-Champaign Aug 2021 - Dec 2022
Master in Statistics *Champaign, Illinois*

Central South University Sep 2016 - Jun 2020
Bachelor in Mathematics *Changsha, China*

Research Interests

I have been working on optimization, machine learning, and networked systems, with a focus on bilevel optimization, federated/decentralized learning, adaptive optimization, and large-scale stochastic optimization. Currently, I am exploring model-driven optimization problems in large language models and generative models.

Publications

- Tuning-Free Bilevel Optimization: New Algorithms and Convergence Analysis.
  Yifan Yang, Hao Ban, Minhui Huang, Shiqian Ma, Kaiyi Ji. **[ICLR 2025]**
- First-Order Federated Bilevel Learning.
  Yifan Yang, Peiyao Xiao, Shiqian Ma, Kaiyi Ji. **[AAAI 2025]**
- First-Order Minimax Bilevel Optimization.
  Yifan Yang*, Zhaofeng Si*, Siwei Lyu, Kaiyi Ji. **[NeurIPS 2024]**
- SimFBO: Towards Simple, Flexible and Communication-efficient Federated Bilevel Learning.
  Yifan Yang, Peiyao Xiao, Kaiyi Ji. **[NeurIPS 2023 Spotlight, 3% acceptance rate]**
- Achieving $\mathcal{O}(\epsilon^{-1.5})$ Complexity in Hessian-free Stochastic Bilevel Optimization.
  Yifan Yang, Peiyao Xiao, Kaiyi Ji. **[NeurIPS 2023]**

Projects

Advanced Federated Bilevel Algorithms | *Results in conference papers SimFBO and First-Order Federated Bilevel Learning*
- Designed and deployed a fast federated bilevel algorithm, achieving 150% convergence speed and 5% accuracy improvement with significant robustness on MLP networks.
- Developed a computation and memory efficient federated bilevel algorithm, achieving 13.6% in accuracy improvement in federated data clean with 5-layer CNNs.

Robust Meta-Learning | *Results in conference paper First-Order Minimax Bilevel Optimization.*
- Designed and deployed minimax bilevel algorithms on rank-based robust meta-learning, achieving 18% accuracy improvement than Model-Agnostic Meta-Learning(MAML) under noisy.

Technical Skills

Languages: Python, R, MATLAB, C++
Technologies: PyTorch, Numpy, Pandas, Matplotlib
Concepts: Optimization, Algorithm, Machine Learning, Deep Learning, Large Language Model, Generative Model

Awards

- Travel Grant, Conference on Neural Information Processing Systems (NeurIPS), 2023
- Outstanding Student Award, 2019
- Outstanding Student Leader Award, 2019
- The Third Prize of Academic Year Scholarship, 2019
- The Third Prize of Academic Year Scholarship, 2018
- The First Prize of Academic Year Scholarship, 2017