

Yufeng Yang, Ph.D. Student

Seeking Machine Learning Engineer, Data Science and Quantitative Internship Opportunities.

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Education

- 2023 – now  **Ph.D. , Computer Science and Engineering**, Texas A&M University, *College Station, TX.*
2023-2024 Ph.D. ,Electrical and Computer Engineering (Transfer out with advisor), University of Utah, *Salt Lake City, UT.*
Advisor: Dr. Yi Zhou
Selected course work: Information Retrieval; Distributed System and Cloud Computing; Deep Reinforcement Learning. Machine Learning; Stochastic Calculus; Game Theory; Multi-agent Reinforcement Learning.
- 2021 – 2023  **M.Sc. ,Computational Science and Engineering**, Rice University, *Houston, TX.*
Selected course work: Deep Learning for Vision and Language; Convex Optimization; Optimization under Uncertainty; Algorithms and Data Structure; Numerical Algebra; Scientific Computing; Statistical Signal Processing.
- 2017 – 2021  **B.Sc. , Mathematics and Applied Mathematics**, The Chinese University of Hong Kong, *Shenzhen, China*
2018 Summer Exchange Program, University of California, Irvine.
Selected course work: Linear and Integer Optimization; Stochastic Process; Partial Differential Equations; Regression Analysis; Mathematical Statistics; Measure Theoretical Probability; Multivariate statistics; Web Data Analytics; Mathematical Analysis; Information Theory.

Employment History

- 2024 – now  **Graduate Research Assistant**, Texas A&M University, *College Station, TX.*
I significantly expanded my previous work in Distributionally Robust Optimization (DRO) with new theoretical analysis and scalable experiments, providing more theoretical insights on how data re-weighting and adversarial samples can enhance model performance. **My PhD thesis continuously focus on designing scalable stochastic optimization and reinforcement learning methods to train robust and human-value aligned AI systems, aiming to overcome real-world challenges such as learning under uncertain environments and conflicting objectives.**
- 2024-2024  **Summer Visiting PhD Student**, Griffiss Institute, *Rome, NY*
I was a visiting Ph.D. student under VFRP program at the Air Force Research Lab. **During 2024 summer, I developed first-order optimization algorithms for problems with irregular geometry and heavy-tailed noise.** Results show combining independent sampling and adaptive normalization enables normalized stochastic gradient descent (SGD) to converge reliably under heavy-tailed gradient noise. These findings were published in *TMLR*.
- 2023 – 2024  **Graduate Research Assistant**, University of Utah, *Salt Lake City, UT.*
Motivated by distribution shifts in large-scale AI, my research focused on designing scalable first-order algorithms for distributionally robust optimization (DRO). **I formulated the DRO problem into a nested contextual stochastic program, where the formulation is provably to be solved via Nested Stochastic Gradient Descent (SGD).** These findings were published at the *NeurIPS OPT workshop*.

Employment History (continued)

- 2020 – 2021
- **Undergraduate Research Assistant.** Shenzhen Institute of Artificial Intelligence and Robotics for Society, *Shenzhen, China*.
I participated in designing new loss functions and fused Generative Adversarial Networks (GANs) with Convolutional Block Attention Module to **improve object detection accuracy on real bottle images from China Resources Sanjiu Medical & Pharmaceutical Co., Ltd.** Additionally, I integrated unsupervised learning into the data processing pipeline to enhance the deep learning model's robustness.

Research Publications

Paper with code

- 1 Y. Yang, E. Tripp, Y. Sun, S. Zou, and Y. Zhou, “Adaptive gradient normalization and independent sampling for (stochastic) generalized-smooth optimization,” *Transactions on Machine Learning Research*, 2025. ↗ URL: <https://github.com/nyyang94/Gensmooth-IAN-SGD.git>.
- 2 Y. Yang, Y. Zhou, and Z. Lu, “Nested stochastic algorithm for generalized sinkhorn distance-regularized distributionally robust optimization,” *Submitted to Journal of Machine Learning Research*, 2025. ↗ URL: <https://github.com/nyyang94/GeneralSinkhorn-Regularized-DRO.git>.
- 3 Y. Yang, Y. Zhou, and Z. Lu, “A stochastic algorithm for sinkhorn distance-regularized distributionally robust optimization,” *NeurIPS 2024 OPT workshop*, 2024.

Other Project Experience

- 2023
- Machine Learning Library
I created **Python API-module** containing attributes for classical machine learning models, including decision trees, ensemble learning, and parametric methods. I also implemented **first-order Optimizers** used in machine learning, such as Nesterov acceleration, mirror descent, proximal gradient descent, and ADMM.
 - Fair Awareness Image Classification
I explored several methods for improving classification accuracy over imbalanced data, including AUC maximization, transfer learning, and contrastive learning with pre-trained vision-language models. My results demonstrate the potential of using multi-modal information to address the challenges posed by ill-conditioned data distributions.
- 2022
- Distributed Cubic Regularization Optimization
I proposed an inexact cubic regularization algorithm for distributed machine learning on static, undirected graphs. The algorithm outperforms previous distributed first-order methods in convergence speed.

Skills

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| Programming Language | ■ Python, MATLAB, C/C++, R, L ^A T _E X, Linux command. |
| Package/Software | ■ PyTorch, Numpy, Pandas, Matplotlib, CVX, Gurobi. |
| Modelling | ■ Machine Learning, Continuous and Discrete Optimization, Differential Equations, Stochastic Modeling and Simulation. |