Honglin Yuan

Curriculum Vitae

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Education

2017 - 2022	**Ph.D. Candidate** in ICME and ML Group, Stanford University. Advisor: Tengyu Ma *GPA: 4.22/4.3*
	Research interest: Machine learning theory, in particular federated learning, deep learning, and optimization theory
2013 - 2017	**B.S.** in **Applied Mathematics**, Peking University. Advisor: Zaiwen Wen *GPA Rank: 2/196*
	Elite Education Program in Applied Mathematics and Statistics	Yuanpei Program
2014 - 2017	**B.S.** in **Computer Science** (Double Degree), Peking University, China

Employment and Service Experience

2019 - present	**Reviewer**, ICML, NeurIPS, ICLR, COLT, TMLR, Journal of Computational Mathematics
2021	**Research Intern	Student Researcher**, Google Research *Hosts: Karan Singhal, Lin Ning, Warren Morningstar*
	Outcome: ICLR 2022 paper "What Do We Mean by Generalization in Federated Learning?", TF Federated SQL modules.
2020	**Research Intern**, Google Research *Hosts: Manzil Zaheer, Sashank Reddi*
	Outcome: ICML 2021 paper "Federated Composite Optimization".
2020, 2022	**Course Assistant**, Machine Learning (CS 229), Stanford *Instructors: Tengyu Ma, Chris Re, Andrew Ng*
	Topics include ML fundamentals, supervised learning, unsupervised learning, and reinforcement learning.
2022	**Course Assistant**, Discrete Mathematics and Algorithms (CME 305) *Instructor: Aaron Sidford*
	Topics include combinatorial, algebraic, spectral algorithms, NP-hardness, and approximation algorithms.
2019, 2020	**Course Assistant** (Head TA for 2020), Optimization (CME 307), Stanford *Instructor: Yinyu Ye*
	Topics include linear and conic linear programming, convex analysis, optimization algorithms and applications.
2014, 2015	**Teaching Assistant**, Introduction to Computations (A), EECS, Peking University *Instructor: Yafei Dai*
	Topics include fundamentals of Computer Science, C and C++ programming, data structures, and algorithms.

Skills

Proficient in: Python (TensorFlow, SciPy, scikit-learn, Pandas), LaTeX, Linux, MATLAB, Wolfram Language
Experienced in: Assembly, C/C++, CUDA, Java, Julia, Lisp, MPI, OpenMP, PyTorch, R, SQL, Web Programming

Publications

Big-Step-Little-Step: Gradient Methods for Objectives with Multiple Scales.
With Jonathan Kelner, Annie Marsden, Vatsal Sharan, Aaron Sidford, Gregory Valiant (alphabetical order) *COLT 2022*

Sharp bounds for Federated Averaging (Local SGD) and Continuous Perspective.
Margalit Glasgow*, Honglin Yuan* (*equal contribution), Tengyu Ma *AISTATS 2022*

What Do We Mean by Generalization in Federated Learning?.
Honglin Yuan, Warren Morningstar, Lin Ning, Karan Singhal *ICLR 2022*

A Field Guide to Federated Optimization.
With Jianyu Wang, Zachary Charles, Zheng Xu, Gauri Joshi, H. Brendan McMahan, et al. *arXiv:2107.06917*

Federated Composite Optimization.
Honglin Yuan, Manzil Zaheer, Sashank Reddi *ICML 2021*

Federated Accelerated Stochastic Gradient Descent.
Honglin Yuan, Tengyu Ma *NeurIPS 2020, Best Paper in ICML'20 FL workshop*

Global Optimization with Orthogonality Constraints via Stochastic Diffusion on Manifold.
Honglin Yuan, Xiaoyi Gu, Rongjie Lai, Zaiwen Wen *Journal of Scientific Computing, 2019*

Selected Honors and Awards

2021	Outstanding Reviewer Award	NeurIPS 2021
2020	Best Paper Award	ICML 2020 Workshop on Federated Learning for User Privacy and Data Confidentiality
2020	NeurIPS Travel Award	NeurIPS 2020
2020	TOTAL Innovation Scholars Award	Stanford University
2019	TOTAL Innovation Fellowship	Stanford University
2017	Stanford School of Engineering Fellowship	Stanford University
2017	Excellent Graduate Award	Peking University
2016	National Scholarship (0.2% highest honored)	Peking University
2016	Silver Prize in S.-T. Yau College Student Mathematics Contests	Yau Mathematical Sciences Center
2016	Meritorious Winners in Interdisciplinary Contest in Modeling	COMAP
2015	Houston BAA Scholarship	Peking University
2015	National Innovative Fund for Undergraduate Research (highest honored)	Peking University
2015	Meritorious Winners in Mathematical Contest in Modeling	COMAP
2014	Founder Scholarship	Peking University
2014	1st rank in the AI Gaming Tournament	EECS, Peking University
2012	First Prize in National High School Mathematics League	Chinese Mathematical Society

Selected Recent Talk

Oct. 2021	INFORMS Annual Meeting 2021, Federated learning and multi-task learning	online
Dev. 2020	Federated Learning One World Seminar	online
Nov. 2020	INFORMS Annual Meeting 2020, Federated Learning and Optimization	online
Oct. 2020	Google Federated Learning Seminars	online
Jul. 2020	ICML 2020 Workshop on Federated Learning for User Privacy and Data Confidentiality	online
Dec. 2019	Peking University BICMR Operations Research Seminar	Beijing, China
Oct. 2019	INFORMS Annual Meeting 2019, Efficient Learning and Optimization in Data Mining	Seattle, WA
Dec. 2016	International Workshop on Signal Processing, Optimization, and Compressed Sensing (SPOC)	Tianjin, China