

SIQI ZHANG

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RESEARCH INTERESTS

- Stochastic optimization, nonconvex optimization, minimax optimization
- Intersection of machine learning, reinforcement learning and optimization
- Federated learning and its applications

ACADEMIC POSITION

Rufus Isaacs Postdoctoral Fellow

Department of Applied Mathematics and Statistics (AMS)

Whiting School of Engineering (WSE)

Johns Hopkins University (JHU)

2022.07 – Present

Baltimore, MD, USA

EDUCATION

Ph.D. in Operation Research

Department of Industrial and Enterprise Systems Engineering (ISE)

University of Illinois at Urbana-Champaign (UIUC)

Supervisor: [Prof. Niao He](#)

2017.08 – 2022.06

Urbana, IL, USA

Visiting Ph.D. Student

Department of Computer Science (D-INFK)

ETH Zürich (Swiss Federal Institute of Technology in Zurich)

2021.08 – 2022.05

Zürich, Switzerland

B.Sc. in Mathematics

Department of Mathematics

Southern University of Science and Technology (SUSTech)

2013.09 – 2017.06

Shenzhen, China

PUBLICATIONS

Publications in Refereed Conferences

1. **Siqi Zhang***, Yifan Hu*, Liang Zhang and Niao He. “Generalization Bounds of Nonconvex-(Strongly)-Concave Stochastic Minimax Optimization.” *International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2024
2. **Siqi Zhang***, Sayantan Choudhury*, Sebastian U Stich and Nicolas Loizou. “Communication-Efficient Gradient Descent-Accent Methods for Distributed Variational Inequalities: Unified Analysis and Local Updates.” *International Conference on Learning Representations (ICLR)*, 2024
3. **Siqi Zhang***, Junchi Yang*, Cristóbal Guzmán, Negar Kiyavash and Niao He. “The Complexity of Nonconvex-Strongly-Concave Minimax Optimization.” *The Conference on Uncertainty in Artificial Intelligence (UAI)*, 2021
4. Yifan Hu*, **Siqi Zhang***, Xin Chen and Niao He. “Biased Stochastic First-Order Methods for Conditional Stochastic Optimization and Applications in Meta Learning.” *Conference on Neural Information Processing Systems (NeurIPS)*, 2020
5. Junchi Yang, **Siqi Zhang**, Negar Kiyavash and Niao He. “A Catalyst Framework for Minimax Optimization.” *Conference on Neural Information Processing Systems (NeurIPS)*, 2020

Publications in Workshops

6. **Siqi Zhang**, Nicolas Loizou. “ProxSkip for Stochastic Variational Inequalities: A Federated Learning Algorithm for Provable Communication Acceleration.” *OPT Workshop on Optimization for Machine Learning (OPT2022)* in NeurIPS 2022
7. **Siqi Zhang***, Yifan Hu*, Liang Zhang and Niao He. “Uniform Convergence and Generalization in Nonconvex Stochastic Minimax Problems.” *OPT Workshop on Optimization for Machine Learning (OPT2022)* in NeurIPS 2022

Publications under Review

8. **Siqi Zhang**, Mouhacine Benosman, Orlando Romero and Anoop Cherian. “First-Order Optimization Inspired from Finite-Time Convergent Flows.” *arXiv preprint arXiv:2010.02990*
9. **Siqi Zhang** and Niao He. “On the Convergence Rate of Stochastic Mirror Descent for Nonsmooth Nonconvex Optimization.” *arXiv preprint arXiv:1806.04781*

(* denotes equal contributions)

TEACHING EXPERIENCE

Johns Hopkins University (JHU)

Instructor

- EN.553.361 Introduction to Optimization Spring 2024
- EN.553.311 Intermediate Probability and Statistics Fall 2023
- EN.553.101 Freshman Experience in Applied Mathematics and Statistics Fall 2023
- EN.553.311 Probability and Statistics for the Biological Sciences and Engineering Spring 2023
- EN.553.310 Probability and Statistics for the Physical and Info. Sci. and Engr. Spring 2023
- EN.553.311 Probability and Statistics for the Biological Sciences and Engineering Fall 2022
- EN.553.101 Freshman Experience in Applied Mathematics and Statistics Fall 2022
 - A semester-long seminar course with a small group of freshman students in JHU
 - Topic: “*Linear Algebra: Visualization and Applications in Daily Life*”

ETH Zürich (Swiss Federal Institute of Technology in Zurich)

Teaching Assistant

- 261-5110-00L Optimization for Data Science Spring 2022
- 263-5255-00L Foundations of Reinforcement Learning Fall 2021

University of Illinois at Urbana-Champaign (UIUC)

Teaching Assistant

- SE 261 Business Side of Engineering Fall 2019
- IE 310 Deterministic Models in Optimization Fall 2018

PROFESSIONAL EXPERIENCES

Research Intern

2021.05 – 2021.08

Data Analytics Group

Cambridge, MA, USA

Mitsubishi Electric Research Laboratories (MERL)

Supervisor: [Dr. Mouhacine Benosman](#)

Visiting Student Intern

2016.06 – 2016.08

Department of Computational Mathematics, Science and Engineering

East Lansing, MI, USA

Michigan State University (MSU)

Supervisor: [Prof. Ming Yan](#), [Prof. Jiayu Zhou](#)

SELECTED INVITED TALKS

- SIAM Conference on Optimization (OP23), Seattle, USA 2023.06
- CAMDA Conference, Texas A&M University, College Station, USA 2023.05
- Annual Conference on Information Sciences and Systems (CISS 2023), Baltimore, USA 2023.03
- INFORMS Annual Meeting, Indianapolis, USA 2022.10
- MINDS & CIS Seminar, Johns Hopkins University, Baltimore, USA 2022.10
- International Conference on Continuous Optimization (ICCOPT), Bethlehem, USA 2022.07
- Young Talents Forum, Department of Mathematics, SUSTech, China (remote) 2022.01
- Young Talents Forum of Mathematics, Harbin Institute of Technology, China (remote) 2021.12

ACADEMIC SERVICES

- Conference Reviewer: NeurIPS, AAAI, ICLR, ICML, AISTATS
- Journal Reviewer:
 - SIAM Journal on Optimization (SIOPT)
 - Transactions on Machine Learning Research (TMLR)
 - Journal of Applied Mathematics and Computing (JAMC)
 - Optimization

SELECTED HONORS AND AWARDS

- Top Reviewer of NeurIPS 2022 2022.10
- Scholarship of Internship in Global Engineering & Advanced Research (inGEAR), MSU 2016.07
- “Yu Qian” Scholarship, Department of Mathematics, SUSTech 2016.05
- Meritorious Winner, Interdisciplinary Contest In Modeling (MCM / ICM 2016) 2016.04