Xufeng Cai

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RESEARCH INTERESTS

Optimization, Machine Learning.

EDUCATION

University of Wisconsin-Madison — Madison, WI

Ph.D. in Computer Sciences — *09/2020 – Present*

- **Advisor:** Jelena Diakonikolas

Shanghai Jiao Tong University — Shanghai, China

B.Sc. in Mathematics and Applied Mathematics, Honorable Class (Zhiyuan College) — *09/2016 - 06/2020*

PUBLICATIONS & PREPRINTS

(* denotes equal contribution)

[5] Last Iterate Convergence of Incremental Methods and Applications in Continual Learning.
X. Cai, J. Diakonikolas.
arXiv preprint, arXiv:2403.06873, 2024.

[4] Variance Reduced Halpern Iteration for Finite-Sum Monotone Inclusions.
X. Cai*, A. Alacaoglu*, J. Diakonikolas.
In *Proceedings of the International Conference on Learning Representations (**ICLR**)*, 2024.

[3] Empirical Risk Minimization with Shuffled SGD: A Primal-Dual Perspective and Improved Bounds.
X. Cai, C-Y. Lin, J. Diakonikolas.
arXiv preprint, arXiv:2306.12498, 2023.

[2] Cyclic Block Coordinate Descent With Variance Reduction for Composite Nonconvex Optimization.
X. Cai, C. Song, S. J. Wright, J. Diakonikolas.
In *Proceedings of the International Conference on Machine Learning (**ICML**)*, 2023.

[1] Stochastic Halpern Iteration with Variance Reduction for Stochastic Monotone Inclusions.
X. Cai, C. Song, C. Guzmán, J. Diakonikolas.
In *Proceedings of the Neural Information Processing Systems (**NeurIPS**)*, 2022.

RESEARCH EXPERIENCE

University of Wisconsin-Madison — Madison, WI

Graduate Research Assistant. Advisor: Jelena Diakonikolas. — *08/2020 - Present*

- Conducting research on large-scale optimization.

Institute of Natural Sciences — Shanghai, China

Undergraduate Research Assistant. Advisors: Xiaoqun Zhang and Shi Jin. — *10/2019 - 05/2020*

- Studied the convergence of the *gradient-free* consensus-based global optimization methods. Conducted the numerical experiments on logistic regression and compressive sensing.

University of Illinois Urbana-Champaign — Urbana, IL

Research Intern. Advisor: Jian Peng. — *07/2019 - 10/2019*

- Developed *deep generative models* for molecular graphs in *drug discovery*. Accelerated the auto-regressive generative model training via deploying the batch-training and parallel-training logics.

PROFESSIONAL EXPERIENCE

Tencent Inc. — Shenzhen, China

Algorithm Engineer Intern. — *07/2020 - 10/2020*

- Developed *graph-based* machine learning approaches for *personalized recommendations*.

TEACHING EXPERIENCE

University of Wisconsin-Madison Madison, WI

- CS639: Foundations of Data Science (TA) — Spring 2022
- CS760: Machine Learning (TA) — Spring 2021
- CS760: Machine Learning (TA) — Fall 2020

SERVICE

Conference Reviews

- International Conference on Learning Representations (**ICLR**) — 2023
- Neural Information Processing Systems (**NeurIPS**) — 2023

SELECTED AWARDS & HONORS

The Interdisciplinary Contest in Modeling (ICM), Comap USA

- Outstanding Winner (top 0.16% in over 20,000 teams worldwide) — 2018

Shanghai Jiao Tong University Shanghai, China

- Academic Excellence Scholarship (top 10% in university) — 2017 & 2018 & 2019
- Zhiyuan Honors Scholarship — 2016 & 2017 & 2018 & 2019
- Xingcai Scholarship (1% in Zhiyuan Honors College) — 2018
- Merit Student (6% in university) — 2018
- Kaiyuan Scholarship (5% in Zhiyuan Honors College) — 2017

TALKS

ICCOPT'22 Session on *Optimization for Data Science and Machine Learning*.
Bethlehem, PA, USA (07/2022).