

WEI LIN

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Education

The Chinese University of Hong Kong, Hong Kong SAR

08.2023 - current

Ph.D. in Computer Science and Engineering Supervised by Prof. Hong Xu

Beihang University, Beijing, China

09.2019 – 06.2023

B.Eng. in Mechanical Engineering GPA:3.82/4 Weighted Score:91.5/100

Rank 0.3% in the university entrance exam

Research Interest

My research is situated at the intersection of machine learning and mathematical optimization, investigating their symbiotic relationship. One primary thrust of my work involves Learning to Optimize (L2O), where I develop deep learning models to automatically learn solution strategies for entire families of optimization problems. This data-driven approach aims to significantly speed up the process of solving new, unseen instances.

Conversely, I explore Optimization for Learning, focusing on how novel optimization algorithms can enhance the training of machine learning models. I have a particular interest in zeroth-order (gradient-free) optimization for its applications in complex, high-dimensional scenarios such as LLM finetuning with just forward pass. Additionally, my prior research has addressed challenges in distributed settings, specifically in developing communication-efficient federated learning algorithms.

Publication List

- **W Lin**, Q Song, H Xu. "The Multi Query Paradox in Zeroth Order Optimization." arXiv preprint (Submitting to AAAI 2025).
- **W Lin**, Q Song, H Xu. "Adaptive Coordinate-Wise Step Sizes for Quasi-Newton Methods: A Learning-to-Optimize Approach." arXiv preprint (Submitting to ICLR 2025).
- Q Song, **W Lin**, H Xu. "Learning Provably Improves the Convergence of Gradient Descent." arXiv preprint (Accepted by NeurIPS 2025).
- Q Song, **W Lin**, J Wang, H Xu. "Towards Robust Learning to Optimize with Theoretical Guarantees." IEEE/CVF CVPR, 2024.
- K Mo, **W Lin**, J Lu, CJ Xue, Y Shao, H Xu. "GHPFL: Advancing Personalized Edge-Based Learning through Optimized Bandwidth Utilization." IEEE Transactions on Cloud Computing, 2025.
- K Mo, X Li, **W Lin**, H Xu, Z Li, C Xue. "Personalized Federated Learning with Auction-Based Client Selection and Edge-Enhanced Model Accuracy." IEEE IJCNN, 2024.
- Y Zhang*, **W Lin***, S Chen, Q Song, J Lu, Y Shao, B Yu, H Xu. "Fed2Com: Towards Efficient Compression in Federated Learning." IEEE ICNC, 2024.
- Y Ding, J Wan, **W Lin**, K Wang. "Coordinated last-mile deliveries with trucks and drones: A comparative study of operational modes." Journal of the Air Transport Research Society, 2024.
- S Wandelt, **W Lin**, X Sun, M Zanin. "From random failures to targeted attacks in network dismantling." Reliability Engineering & System Safety, 2021.
- **W Lin**, S Wandelt, X Sun. "Efficient network dismantling through genetic algorithms." Soft Computing, 2021.

Work Experience

Huawei Technologies Co., Ltd., Beijing, China

02.2023 - 06.2023

Visiting Student

- Project: Communication efficient federated learning.
- Advisor: Dr. Jiaxun Lu

Hong Kong University of Science and Technology (Guangzhou), Guangzhou, China

03.2022 - 12.2022

Undergraduate Research Assistant

- Project: Understanding Non-pharmaceutical Interventions on Individual Mobility via a Deep Geographic-marked Point Process.
- Advisor: Prof. Jia Li

The Chinese University of Hong Kong, Hong Kong

03.2022 - 08.2022

Undergraduate Research Assistant

- Project: Hyperbolic Graph Neural Networks for Recommendation System.
- Advisor: Dr. Menglin Yang

Beihang University, Beijing, China

06.2021 - 02.2022

Undergraduate Research Assistant

- Project: Network Dismantling.
- Advisor: Prof. Sebastian Wandelt

Contest Experience

Finalist in Interdisciplinary Contest In Modeling

2021

- Project: Unveil the Mystery behind Musical Evolution.
- Advisor: Prof. Sebastian Wandelt

Teaching Assitance

CUHK, ENGG1120, Linear Algebra for Engineers

Spring 2024, Spring 2025

CUHK, ENGG2760, Probability for Engineers

Fall 2023, Fall 2024

BUAA, Computer science and Programming

Fall 2021

BUAA, Data Management and Artificial Intelligent

Spring 2021

Scholarship/Award

2023-2027 Postgraduate Studentship, CUHK

2023 Excellent Graduate, BUAA

2019-2020, 2020-2021, 2021-2022 Learning Excellent Scholarship, BUAA

2019-2020 Excellent Student, BUAA

2020-2021, 2021-2022 Merit student, BUAA

2020-2021 Discipline Competition Scholarship, BUAA

2020-2021, 2021-2022 Social Work Outstanding Scholarship, BUAA

Service

Conference Reviewer: ICLR 2025, AAAI 2026

Journal Reviewer: TNSE