

Xiaoyuan Zhang

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EDUCATION

Okinawa Institute of Science and Technology Graduate University (OIST), Okinawa, Japan

Visiting Scholar, Department of Computer Science (July 2024 – August 2024)

- Hosted by [Prof. Han Zhao](#) (UIUC) and [Prof. Makoto Yamada](#) (OIST, RIKEN).
- Research: Multiobjective Federated Learning.

City University of Hong Kong (CityUHK), Hong Kong SAR, China

Ph.D. Candidate, Department of Computer Science (June 2021 – April 2025)

- Supervised by [Chair Prof. Qingfu Zhang](#) (FIEEE).
- Research Interests: Multiobjective Optimization; Reinforcement Learning; Large Language Models (LLMs).
- Ph.D. Thesis: *Pareto Machine Learning: Theories, Systems, and Applications*.

Shanghai Jiao Tong University (SJTU), Shanghai, China

B.S. and M.S. in Mechanical Engineering (Sept 2013 – June 2017; Sept 2017 – June 2020)

- Bachelor's GPA: Top 30%; Master's GPA: Top 5%.
- Supervised by [Prof. Chenkun Qi](#).

High School Affiliated to Fudan University (FDFZ), Shanghai, China

High School Student (Sept 2010 – June 2013)

PUBLICATIONS (* DENOTED EQUAL CONTRIBUTION)

- [1] **Xiaoyuan Zhang**, Genghui Li, Xi Lin, Yichi Zhang, Yifan Chen, Qingfu Zhang. Gliding over the Pareto Front with Uniform Designs. **NeurIPS (CCF A)**, 2024.
- [2] **Xiaoyuan Zhang***, Liang Zhao*, Yingying Yu*, Xi Lin, Yifan Chen, Han Zhao, Qingfu Zhang. LibMOON: A Gradient-based MultiObjective OptimizatioN Library in PyTorch. **NeurIPS (CCF A)**, 2024.
- [3] Yifan Zhong*, Chengdong Ma*. **Xiaoyuan Zhang***, Ziran Yang, Haojun Chen, Qingfu Zhang, Siyuan Qi, Yaodong Yang. Panacea: Pareto Alignment via Preference Adaptation for LLMs. **NeurIPS (CCF A)**, 2024.
- [4] **Xiaoyuan Zhang**, Xi Lin, Bo Xue, Yifan Chen, Qingfu Zhang. Hypervolume Maximization: A Geometric View of Pareto Set Learning. **NeurIPS (CCF A)**, 2023.
- [5] **Xiaoyuan Zhang**, Xi Lin, Qingfu Zhang. PMGDA: A Preference-based Multiple Gradient Descent Algorithm. *IEEE Transactions on Emerging Topics in Computing*. 2024.
- [6] Xi Lin, **Xiaoyuan Zhang**, Zhiyuan Yang, Qingfu Zhang. Evolutionary Pareto Set Learning with Structure Constraints. *IEEE Transactions on Evolutionary Computation*. 2024.
- [7] Xi Lin, **Xiaoyuan Zhang**, Zhiyuan Yang, Fei Liu, Zhenkun Wang, Qingfu Zhang. Smooth Tchebycheff Scalarization for Multi-Objective Optimization. **ICML (CCF A)**, 2024.
- [8] Xi Lin, Zhiyuan Yang, **Xiaoyuan Zhang**, Qingfu Zhang. Continuation Path Learning for Homotopy Optimization. **ICML (CCF A)**, 2023.

[9] Xi Lin, Zhiyuan Yang, **Xiaoyuan Zhang**, Qingfu Zhang. Pareto Set Learning for Expensive Multi-Objective Optimization. **NeurIPS (CCF A)**, 2022.

UNDER REVIEW PAPERS

(*: Equal Contribution. †: Equal Corresponding.)

[1] **Xiaoyuan Zhang**, Yingying Yu, Yichi, Zhang, Han Zhao, Qingfu Zhang. Multiobjective Distribution Matching. **AISTATS**, 2025.

[2] Meitong Liu, **Xiaoyuan Zhang**, Chulin Xie, Kate Donahue, Han Zhao. Online Mirror Descent for Tchebycheff Scalarization in Multi-Objective Optimization. **AISTATS**, 2025.

[3] Xi Lin, Yilu Liu, **Xiaoyuan Zhang**, Fei Liu, Zhenkun Wang, Qingfu Zhang. Few for Many: Tchebycheff Set Scalarization for Many-Objective Optimization. **ICLR**, 2025.

[4] Qinghao Wang, **Xiaoyuan Zhang**, Chengdong Ma, Yaodong Yang. Generalizable Multi-Objective Deep Reinforcement Learning Framework for Economic Simulations: A Case Study of the Monetary Policy Trilemma. **AAMAS**, 2025.

[5] Weiyu Chen*, **Xiaoyuan Zhang***, Baijiong Lin*, Xi Lin, Zhichao Lu, Ying-Cong Chen, Han Zhao†, Qingfu Zhang†, James T. Kwok†. Pareto Machine Learning: Ten Years' Achievement and Promising Directions. **TPAMI**.

[6] Bo Xue, Xi Lin, **Xiaoyuan Zhang**, Qingfu Zhang. Multiple Trade-offs: An Improved Approach for Lexicographic Linear Bandits. **AAAI**, 2025.

ACADEMIC SERVICE

Reviewer of ICML 2021-2024, NeurIPS 2022-2024, ICLR 2022-2025, AISTATS 2025, AAAI 2025, Swarm Evolutionary Computation.

TEACHING EXPERIENCE

CS2402 Intro to Comp Prob Modeling, 2021/22 Fall, Teaching assistant.

CS4335 Design and Analy of Algorithms, 2021/22 Spring, Teaching assistant.

CS4335 Design and Analy of Algorithms, 2022/23 Fall, Teaching assistant.

CS2402 Intro to Comp Prob Modeling, 2022/23 Spring, Teaching assistant.

CS4335 Design and Analy of Algorithms, 2023/24 Fall, Teaching assistant.

CS6491 Top in Optmztn & its Apns inCS, 2023/24 Spring, Teaching assistant.

PROFESSIONAL TALKS

1. MOO: from a Single Solution, to a Set of Solutions, and to Infinite Solutions. Institute for Artificial Intelligence, Peking University, Beijing. Host: Prof. Yaodong Yang. Mar. 8, 2024.

2. Pareto Machine Learning: Theories, Systems, and Applications. OIST, Japan. Host: Prof. Han Zhao, Makoto Yamada. July 18, 2024.

AWARD

1. Yidian Scholarship, 2015 (top 5% students). Shanghai Jiao Tong University. (6,000 CNY).

2. B-class Scholarship, 2016 (top 15% students). Shanghai Jiao Tong University. (1,500 CNY).

3. China Undergraduate Mathematical Contest in Modeling. National second prize. 2017.

4. The Mathematical Contest in Modeling (MCM). World second prize. 2017.

5. The first place (1/250) of the Beauty of Programming (BOP) Competition. 2017. Microsoft and IEEE (**0.1 million CNY**).

6. China Graduate Mathematical Contest in Modeling. National second prize. 2018.

7. The Gold Medal of 9th World University Bridge Championship. 2018. (reported by China Sports General Administration).
8. Outstanding Academic Performance Award, 2024. CityUHK (1,000 HKD).
9. Postgraduate Studentship (19,200 HKD per month).
10. Institutional Research Tuition Grant (3,508 HKD per month).

INTERNSHIP

1. Microsoft Research Asia, from 6.2019 to 9.2019, Supervisor: Prof. Tao Qin.
2. Huawei Central Research Lab, from 8.2020 to 5.2021, Supervisor: Yanong He.