

ZHONGLIN XIE, PH.D. CANDIDATE



Peking University

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EDUCATION

- 09/2021 – Now ◇ **Ph.D. Computational Mathematics**
Beijing International Center for Mathematical Research, Peking University.
Member of **The Elite Ph.D. Program in Applied Mathematics**.
Advisor: Prof. **Zaiwen Wen**.
- 09/2017 – 07/2021 ◇ **B.Sc. Computational Mathematics**
School of Mathematical Sciences, Peking University.
Member of **The Elite Program of Applied Mathematics and Statistics for Undergraduates**.
- 09/2018 – 07/2021 ◇ **B.Econ. Economics**
National School of Development, Peking University.

PUBLICATIONS (* denotes equal contribution)

Preprints

- 1 Chenyi Li*, Shuchen Zhu*, **Zhonglin Xie**, and Zaiwen Wen, *Accelerated Natural Gradient Method for Parametric Manifold Optimization*, (Under review at SIAM Journal on Scientific Computing), 2025. arXiv: [2504.05753 \[math.OC\]](#).
- 2 Ruonan Wang*, Yongqi Qiao*, **Zhonglin Xie**, and Kun Yuan, *DRAW: Domain Weight Randomization with Bayesian Updating for LLM Pre-Training*, (Submitted to AAAI 2026), 2025.
- 3 **Zhonglin Xie**, Yiman Fong, Haoran Yuan, and Zaiwen Wen, *Accelerating Optimization via Differentiable Stopping Time*, (Submitted to NeurIPS 2025), 2025. arXiv: [2505.22509 \[cs.LG\]](#).
- 4 **Zhonglin Xie**, Wotao Yin, and Zaiwen Wen, *ODE-Based Learning to Optimize*, (Under review at Math. Prog., Major Revision), 2024. arXiv: [2406.02006 \[math.OC\]](#).

Journal Articles

- 1 Jinxin Wang, Fan Zhang, **Zhonglin Xie**, Zaiwen Wen, and Gong Zhang, *Joint Bandwidth Allocation and Path Selection in WANs with Path Cardinality Constraints*, Journal of Communications and Information Networks, vol. 6, no. 3, pp. 237–250, 2021. 📄 DOI: [10.23919/JCIN.2021.9549120](#).

Conference Proceedings

- 1 Hongliang Lu*, **Zhonglin Xie***, Yaoyu Wu, Can Ren, Yuxuan Chen, and Zaiwen Wen, *OptMATH: A Scalable Bidirectional Data Synthesis Framework for Optimization Modeling*, in Forty-Second International Conference on Machine Learning (ICML 2025), 2025. arXiv: [2502.11102 \[cs.AI\]](#).
- 2 Yu Zhang*, Yifan Chen*, **Zhonglin Xie**, Hong Xu, Zaiwen Wen, Yibo Lin, and Bei Yu, *LRSDP: Low-Rank SDP for Triple Patterning Lithography Layout Decomposition*, in ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, Jul. 2023.

INTERNSHIP

- | | |
|----------------------------|---|
| 08/2025–11/2025 (Expected) | ◇ Quantitative Research, Ubiquant, Beijing, China. |
| 05/2025–07/2025 | ◇ LLM Alignment Team, Baidu, Inc., Beijing, China. |
| | ◇ I worked on enhancing the mathematical reasoning capabilities of large language models (LLMs) using reinforcement learning with verifiable rewards. My primary focus was improving the efficiency of RL algorithms through importance sampling for queries. I also explored controlling the entropy of the actor and assigning query rewards to critical tokens. Additionally, this internship provided me with experience in tuning LLMs on 64 H800 cards. |
| 08/2020–10/2020 | ◇ Theory Lab, Huawei Technologies Co., Ltd., Beijing, China. |
| | ◇ This internship led to a publication in JCIN, focusing on optimal resource allocation under practical constraints. |

SELECTED AWARDS

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| 2025 | ◇ Presidential Scholarship, Peking University. |
| 2024 | ◇ Presidential Scholarship, Peking University. |
| 2023 | ◇ Presidential Scholarship, Peking University. |
| | ◇ Third-Class Scholarship, Peking University. |
| 2022 | ◇ Ubiquant Scholarship, Peking University. |

TEACHING

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| 2024, Summer | ◇ TA, Modern Optimization (PKU Summer School on Applied Mathematics, Lectured by Professor Yurii Nesterov). |
| 2023, Fall | ◇ TA, Convex Optimization. |
| 2022, Fall | ◇ TA, Convex Optimization. |
| 2022, Summer | ◇ TA, Deep Learning Optimization Theory (PKU Summer School on Applied Mathematics). |
| 2022, Spring | ◇ TA, Learning by Research. |
| 2021, Fall | ◇ TA, Advanced Mathematics A (I). |