Jing Xu（许靖）

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EDUCATION

Tsinghua University 2021.9 – 2026.7 (expected)

Ph.D. in Computer Science at IIIS

- **Advisor:** Andrew Chi-Chih Yao

Peking University 2017.9 – 2021.7

B.S. in Artificial Intelligence at EECS (Turing Honor Program, with summa cum laude)

- **Overall GPA:** 3.87/4.00
- **Ranking:** 1/93
- **Advisor:** Liwei Wang

RESEARCH INTERESTS

My research lies at the intersection of theoretical and applied machine learning. On the theoretical side, I am interested in establishing provable guarantees for the generalization and optimization of machine learning algorithms. On the empirical side, I have hands-on experience with large-scale LLM pre-training and am committed to designing efficient optimization algorithms that improve the scalability and performance pre-training.

I have worked on topics including:

- Parameter Efficient Fine-tuning of LLMs.
- Scalable model merging.
- Generalization guarantees of machine learning algorithms.
- Implicit bias and their empirical signals.
- Optimization Algorithm for structured problems.

INDUSTRY EXPERIENCE

Moonshot AI 2025.2 – 2025.6

Machine Learning Intern at pre-training team

- Developed efficient optimization algorithm (e.g. Muon and its variants) for LLM.
- Got hands-on experience with LLM pre-training, covering aspects including scaling, architecture, data.

Jump Trading 2024.6 – 2024.8

Quantitative Research Intern

- Conducted alpha analysis for China's stock market.
- Developed a volatility prediction model.
- Designed and implemented a transaction cost prediction model.

PUBLICATIONS

(* denotes equal contribution)

1. **Scalable Model Merging with Progressive Layer-wise Distillation**
   Jing Xu, Jiazheng Li, Jingzhao Zhang
   Forty-Second International Conference on Machine Learning (ICML 2025)

2. **Understanding Nonlinear Implicit Bias via Region Counts in Input Space**
   Jingwei Li*, **Jing Xu***, Zifan Wang, Huishuai Zhang, Jingzhao Zhang
   Forty-Second International Conference on Machine Learning (ICML 2025)

3. **Near-Optimal Methods for Convex Simple Bilevel Problems**
   Huaqing Zhang*, Lesi Chen*, **Jing Xu**, Jingzhao Zhang
   The Thirty-ninth Annual Conference on Neural Information Processing Systems (Neurips 2024)

4. **Random Masking Finds Winning Tickets for Parameter Efficient Fine-tuning**
   Jing Xu, JingZhao Zhang
   The Forty-first International Conference on Machine Learning (ICML 2024)

5. **On Bilevel Optimization without Lower-level Strong Convexity**
   Lesi Chen*, **Jing Xu***, JingZhao Zhang
   The Thirty-seventh Annual Conference on Learning Theory (COLT 2024)

6. **Towards Data-Algorithm Dependent Generalization Analysis: a Case Study on Overparameterized Linear Regression**
   Jing Xu*, Jiaye Teng*, Yang Yuan, Andrew C Yao
   The Thirty-eighth Annual Conference on Neural Information Processing Systems (Neurips 2023)

7. **Quantifying the Variability Collapse of Neural Networks**
   Jing Xu*, Haoxiong Liu*
   The Fortieth International Conference on Machine Learning (ICML 2023)

8. **Faster Gradient-Free Algorithms for Nonsmooth Nonconvex Stochastic Optimization**
   Lesi Chen, **Jing Xu,** Luo Luo
   The Fortieth International Conference on Machine Learning (ICML 2023)

HONERS & AWARDS

- Ubiquant Scholarship (2024.9)
- IIIS Scholarship (2022.9 & 2023.9)
- Toyota Scholarship (2023.9)
- Excellent Graduate of PKU (2021.7)
- John Hopcroft Scholarship (2020.9)
- Turing Class Scholarship (2019.9)
- Award for Academic Excellence at PKU (2018.9)
- May 4th Scholarship at PKU (2018.9)

SKILLS

- **English Proficiency:** TOEFL iBT: 107(Reading: 30, Listening: 29, Speaking: 24, Writing: 24), GRE: 332

- **Coding:** I am familiar with modern machine learning frameworks such as PyTorch. I have hands-on experiences of customizing distributed training frameworks such as Megatron.

TEACHING ASSISTANT EXPERIENCES

1. Mathematics for Computer Science
   Taught by Professor Andrew Chi-Chih Yao, Tsinghua University, 2022~2023 Spring
2. Introduction to Optimization
   Taught by Professor JingZhao Zhang, Tsinghua University, 2022~2023 Autumn
3. Introduction to Computer Systems
   Taught by Professor Chenren Xu, Peking University, 2019~2020 Autumn

SERVICES

- Served as a reviewer of ICML2022, 2024, 2025, Neurips2023, 2024, ICLR2024, 2025, CVPR2024, AAAI2025, AISTATS 2025