Jing Xu

PhD Candidate, Institute for Interdisciplinary Information Sciences, Tsinghua University
Tel: (+86) 18811613160, E-mail: xujing21@mails.tsinghua.edu.cn

EDUCATION

TSINGHUA UNIVERSITY 2021.9 – Present

Ph.D. in Computer Science at IIIS

- **Advisor:** Andrew Chi-Chih Yao
- **Honors and Awards:**
  IIIS Scholarship (2022.9 & 2023.9)
  Toyota Scholarship (2023.9)

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
- **Courses:**
  Probability and Statistics (4.00), Linear Algebra (4.00), Combinatorial Mathematics (3.95 & 4.00)
  Data Structure and Algorithm (3.88), Algorithm Design and Analysis(3.88), Convex Optimization(3.88)
- **Honors and Awards:**
  May 4th Scholarship at PKU (2018.9)
  Award for Academic Excellence at PKU (2018.9)
  Turing Class Scholarship (2019.9)
  John Hopcroft Scholarship (2020.9)
  Huawei Scholarship (2020.9)
  Excellent Graduate of PKU (2021.7)

RESEARCH INTERESTS

My research focuses on machine learning, both on theoretical side and application side. I enjoy establishing theoretical guarantees of generalization and optimization of deep learning algorithms. My current research focuses on designing practical and theoretically-sound optimization algorithms to pretrain and finetune large language models. I have previously worked on topics including generalization, adversarial robustness, federated learning and differential privacy.

PUBLICATIONS AND PREPRINTS

1. Jing Xu*, Jiaye Teng*, Yang Yuan, Andrew C Yao
   Towards Data-Algorithm Dependent Generalization Analysis: a Case Study on Overparameterized Linear Regression
   Neurips 2023
2. Jing Xu*, Haoxiong Liu*
   Quantifying the Variability Collapse of Neural Networks
   ICML 2023
3. Lesi Chen, Jing Xu, Luo Luo
   Faster Gradient-Free Algorithms for Nonsmooth Nonconvex Stochastic Optimization

ICML 2023

4. Lesi Chen*, Jing Xu*, JingZhao Zhang
   On Bilevel Optimization without Lower-level Strong Convexity
   in submission, arXiv 2301.00712
5. Jing Xu, Sen Wang, Liwei Wang, Andrew C Yao
   FedCM: Federated Learning with Client-level Momentum
   in submission, arXiv 2106.10874

SKILLS

- **Programming:** Python, C/C++, Matlab, PyTorch, LaTeX
- **English Proficiency:** TOEFL iBT: 107(Reading: 30, Listening: 29, Speaking: 24, Writing: 24), GRE: 332

TEACHING ASSISTANT EXPERIENCE

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, Neurips2023, ICLR2024, CVPR2024.