Shange Tang

1(609)480-4379 shangetang@princeton.edu sangertang1999@gmail.com https://shangetang.github.io

Education

Princeton University **Sep 2021 – Current**

PhD, Operations Research and Financial Engineering (ORFE)

- Advisors: Prof. Jianqing Fan and Prof. Chi Jin
- Research interests: theory and applications in statistics and machine learning, with a focus on automated theorem proving, OOD generalization and factor models

Peking University **Sep 2017 – Jun 2021**

B.S., Mathematics and Applied Mathematics

- Major in Probability and Statistics, Major GPA: 3.89/4.00

Research

* denotes equal contribution.

Publications

- **Shange Tang***, Jiayun Wu*, Jianqing Fan, Chi Jin. Benign Overfitting in Out-of-Distribution Generalization of Linear Models. International Conference on Learning Representations (ICLR) 2025. [arXiv]
- Jiawei Ge*, **Shange Tang***, Jianqing Fan, Cong Ma, Chi Jin. Maximum Likelihood Estimation is All You Need for Well-Specified Covariate Shift. International Conference on Learning Representations (ICLR) 2024 [arXiv]
- Jiawei Ge*, **Shange Tang***, Jianqing Fan, Chi Jin. On the Provable Advantage of Unsupervised Pretraining. International Conference on Learning Representations (ICLR) 2024, spotlight [arXiv]

Preprints

- Haoyu Zhao, Yihan Geng, **Shange Tang**, Yong Lin, Bohan Lyu, Hongzhou Lin, Chi Jin, Sanjeev Arora. Ineq-Comp: Benchmarking Human-Intuitive Compositional Reasoning in Automated Theorem Proving on Inequalities. arXiv preprint arXiv:2505.12680 (2025). [arXiv]
- **Shange Tang**, Yuanhao Wang, Chi Jin. Is Elo Rating Reliable? A Study Under Model Misspecification. arXiv preprint arXiv:2502.10985 (2025). [arXiv]
- Yong Lin*, **Shange Tang***, Bohan Lyu, Jiayun Wu, Hongzhou Lin, Kaiyu Yang, Jia Li, Mengzhou Xia, Danqi Chen, Sanjeev Arora, Chi Jin. Goedel-Prover: A Frontier Model for Open-Source Automated Theorem Proving. arXiv preprint arXiv:2502.07640 (2025). [arXiv]
- Kaixuan Huang, Jiacheng Guo, Zihao Li, Xiang Ji, Jiawei Ge, Wenzhe Li, Yingqing Guo, Tianle Cai, Hui Yuan, Runzhe Wang, Yue Wu, Ming Yin, **Shange Tang**, Yangsibo Huang, Chi Jin, Xinyun Chen, Chiyuan Zhang, Mengdi Wang. MATH-Perturb: Benchmarking LLMs' Math Reasoning Abilities against Hard Perturbations. arXiv preprint arXiv:2502.06453 (2025). [arXiv]
- **Shange Tang**, Soham Jana, Jianqing Fan. Factor Adjusted Spectral Clustering for Mixture Models. arXiv preprint arXiv:2408.12564 (2024) [arXiv]

Awards

- Peking University Scholarship Nov 2020
- Academic Excellent Award, Peking University Nov 2018, 2019, 2020
- Yizheng Scholarship, Peking University Nov 2019
- May 4th Scholarship, Peking University Nov 2018
- First Prize in the Chinese Mathematical Competition Nov 2018
- Elite Scholarship, School of Mathematical Sciences, PKU Aug 2018
- Gold Medal in Russian Mathematical Olympiad (RMO) Apr 2016
- Gold Medal in 31st Chinese Mathematical Olympiad (CMO) Dec 2015

Invited Talks

- "Maximum Likelihood Estimation is All You Need for Well-Specified Covariate Shift", UIUC Machine Learning Seminar, Mar 2024.
- "Goedel-Prover: A Frontier Model for Open-Source Automated Theorem Proving", TTIC Machine Learning Seminar, Mar 2025.

Employment

Princeton University **Sep 2022 – Current**

Assistant in Instruction

- COS 511: Theoretical Machine Learning, Fall 2023
- ORF 245: Fundamentals of Statistics, Spring 2023, Spring 2024, Fall 2024
- ORF 309: Probability and Stochastic Systems, Fall 2022
- ORF 525: Statistical Foundations of Data Science, Spring 2025

Relevant Skills

Languages: English, Chinese
Programming: Python; LaTeX; R