

# TIANZE JIANG

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## EDUCATION

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**Ph.D., Princeton University** Operations Research and Financial Engineering **2024 - present**

*Advisor: Prof. Boris Hanin.*

**B.S., Massachusetts Institute of Technology** Mathematics and Computer Science (GPA: 5.0/5.0) **2020 - 2024**

### Selected Honors and Awards:

- Francis Robbins Upton Graduate Fellowship 2024
- William Lowell Putnam Math Competition, N1 (top 15 overall) 2021
- International Math Olympiad (IMO), Team USA, Silver Medal 2020
- USA Math Olympiad (USAMO) winner, 5th place nationwide 2020
- Asian Pacific Math Olympiad, 3rd place worldwide 2020
- Chinese International Math Olympiad (IMO) Team Candidate (top 15 overall) 2018

## RESEARCH INTERESTS

I'm interested in the theory of deep learning from the perspectives of statistical physics, theoretical computer science, and probability. A broad current project is about analyzing behaviors of the scaling limits of deep networks via tools from random matrix theory. In the past, I've also worked on non-asymptotic and high-dimensional inference problems and explored their average-case complexity.

## SELECTED RESEARCH

\*Papers in this section are *all* under joint first-authorship, ordered *alphabetically*

1. Boris Hanin, **TJ**, “*Global Universality of Singular Values in Products of Many Large Random Matrices.*” (2025+) [Paper](#).
2. Patrik Gerber, **TJ**, Yury Polyanskiy, Rui Sun, “*Density estimation using the perceptron.*” (2025) Accepted In: *Journal of Machine Learning Research (JMLR)*. [Paper](#).
3. Yanjun Han, **TJ**, Yihong Wu, “*Prediction from compression for models with infinite memory.*” In: *Proc Conf on Learning Theory (COLT 2024)*, July 2024. [Paper](#).
4. Patrik Gerber, **TJ**, Yury Polyanskiy, Rui Sun, “*Kernel-based Tests for Likelihood-Free Hypothesis Testing.*” In: *Proc 37th Adv Neural Inf Process Syst (NeurIPS 2023)*, December 2023. [Paper](#).
5. Guy Bresler and **TJ**, “*Detection-Recovery and Detection-Refutation Gaps via Reductions from Planted Clique.*” In: *Proc Conf on Learning Theory (COLT 2023)*, July 2023. [Paper](#).

## SELECTED PRESENTATIONS

- Sampling via stochastic localization, Bresler Research Group, MIT Nov. 2023
- Computational lower bounds via avg. case reductions, Chen Research Group, Harvard Oct. 2023
- Slicing with random half-spaces, Pilanci Research Group, Stanford Apr. 2023
- Likelihood-Free Inference with kernels, Polyanskiy Research Group, MIT Dec. 2022

## INDUSTRY EXPERIENCES

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**Quantitative Research Intern, Citadel Securities**, Miami, FL Jun. - Aug. 2024  
*FICC and Systematic Equities*

- Constructed market impact accounting models of high-frequency trades on the US equities market.

**Quantitative Research Intern, TongDeng Capital**, Shanghai, China May. - Aug. 2021  
*Chinese Equities*

- Studied monetization of Chinese equities under the T+1 constraints.

## OTHER EXPERIENCES

- **Reviewer:** IEEE Transactions on Information Theory, Algorithmic Learning Theory (ALT) 2024
- **Grader, Test Reviewer,** IMO (USA) Team Selection Tests. 2021