

# Jikai Jin

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## Education

- **ICME, Stanford University** **Stanford, CA, USA**  
*Ph.D. in computational & mathematical engineering* *2023 – 2027 (expected)*  
Advisor: Vasilis Syrgkanis.
- **School of Mathematical Sciences, Peking University** **Beijing, China**  
*B.S. in computational mathematics* *2019 – 2023*  
Advisor: Liwei Wang.

## Current Research interest

I am broadly interested in the intersections of statistics, econometrics, machine learning and operations research. My current research interest lies in the following disciplines:

- **Statistics & econometrics:** causal inference, nonparametric estimation, double/debiased machine learning
- **Machine learning:** causal machine learning, machine learning for sciences, deep learning theory
- **Operations research:** non-convex optimization, data-driven decision making, experiment design

## Publications

(\* denotes alphabetical ordering or equal contribution)

1. Bohang Zhang\*, **Jikai Jin\***, Cong Fang & Liwei Wang. **Improved Analysis of Clipping Algorithms for Non-convex Optimization**, 33th Annual Conference on Neural Information Processing Systems (NeurIPS), 2020.
2. **Jikai Jin**. **On The Convergence of First Order Methods for Quasar-Convex Optimization**, 12th Annual Workshop on Optimization for Machine Learning, arXiv preprint arXiv:2010.04937, 2020.
3. **Jikai Jin\***, Bohang Zhang\*, Haiyang Wang & Liwei Wang. **Non-convex Distributionally Robust Optimization: Non-asymptotic Analysis**, 34th Annual Conference on Neural Information Processing Systems (NeurIPS), 2021.
4. **Jikai Jin** & Suvrit Sra. **Understanding Riemannian Acceleration via a Proximal Extragradient Framework**, 35th Annual Conference on Learning Theory (COLT), 2022.
5. Binghui Li\*, **Jikai Jin\***, Han Zhong, John E. Hopcroft & Liwei Wang. **Why Robust Generalization in Deep Learning is Difficult: Perspective of Expressive Power**, 35th Annual Conference on Neural Information Processing Systems (NeurIPS), 2022.
6. **Jikai Jin**, Yiping Lu, Jose Blanchet & Lexing Ying. **Minimax Optimal Kernel Operator Learning via Multilevel Training**, the Eleventh International Conference on Learning Representations (ICLR), **notable top 25%**, 2023. Preliminary version appeared in the NeurIPS 2022 workshop on AI for Science.
7. **Jikai Jin**, Zhiyuan Li, Kaifeng Lyu, Simon S. Du & Jason D. Lee. **Understanding Incremental Learning of Gradient Descent: Fine-grained analysis of Matrix Sensing**, the 40th International Conference on Machine Learning (ICML), 2023.
8. Kaifeng Lyu\*, **Jikai Jin\***, Zhiyuan Li, Simon S. Du, Jason D. Lee, Wei Hu. **Dichotomy of Early and Late Phase Implicit Biases Can Provably Induce Grokking**, the Twelfth International Conference on Learning Representations (ICLR), 2024.

9. **Jikai Jin** & Vasilis Syrgkanis. *Learning Causal Representations from General Environments: Identifiability and Intrinsic Ambiguity*, ArXiv preprint 2311.12267, 2023.
10. **Jikai Jin** & Vasilis Syrgkanis. *Structure-agnostic Optimality of Doubly Robust Learning for Treatment Effect Estimation*, ArXiv preprint 2402.14264, 2024.

## Invited Talks

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### Minimax Optimal Kernel Operator Learning

ICLR 2023 (Kigali, Rwanda)	2023.05
Elite Undergraduate Training Program Seminar (Peking University)	2023.05
International Seminar on Foundational Artificial Intelligence (online, in Chinese)	2023.07

### Incremental Learning of Gradient Descent

Prof. Rong Ge's group (Duke University, online)	2023.03
ICML 2023 (Hawaii, USA)	2023.07
2023 INFORMS Annual Meeting (Phoenix, AZ, USA)	2023.10

## Honors and Awards

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**2016:** Second Prize , Chinese Mathematical Olympiad (CMO)  
**2017:** First Prize (ranked No.13 nationwide) , Chinese Mathematical Olympiad (CMO)  
**2018:** First Prize (ranked No.6 nationwide) , Chinese Mathematical Olympiad (CMO)  
**2018:** Gold Medal (mathematics individual, ranked No.2) and First Place (as a member of the Shanghai team), the 2nd International Olympiad of Metropolises  
**2019:** Silver Medal, 11th Romania Masters of Mathematics (RMM)  
**2020:** Yizheng Scholarship, Peking University  
**2020:** Qin Wanshun-Jin Yunhui Scholarship, Peking University  
**2021:** Bronze Medal, S.T. Yau College Student Mathematics Contest (Probability & Statistics individual)  
**2021:** Peking University Exceptional Award for Academic Innovation (**Top 1% of PKU student researchers**)  
**2022:** Merit Student, Peking University  
**2022:** Qin Wanshun-Jin Yunhui Scholarship, Peking University  
**2023:** SenseTime Scholarship (**Awarded to 30 Chinese undergraduate students in the field of AI**)  
**2023:** Peking University Excellent Graduate  
**2023:** Huaixin Scholar, Peking University (**Top 5% of PKU graduates**)  
**2021 – 2023:** The elite undergraduate training program of Applied Mathematics and Statistics  
**2023:** The Enlight Foundation Graduate Fellowship, Stanford University

## Professional Service

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**Conference Reviewer/PC:** NeurIPS 2023, AAAI 2024, ICLR 2024, AISTATS 2024

**Workshop Reviewer:** NeurIPS 2023 workshop on the Mathematics of Modern Machine Learning (M3L)

**Journal Reviewer:** IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

## Language

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**Native:** Chinese (Mandarin), Shanghaiese

**Fluent:** English