

Zeyu Jia

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EDUCATION

Massachusetts Institute of Technology Ph.D., Electrical Engineering & Computer Science Advisor: Yury Polyanskiy & Alexander Rakhlin	09/2020 --- present
Massachusetts Institute of Technology M.S., Electrical Engineering & Computer Science Advisor: Yury Polyanskiy & Alexander Rakhlin	09/2020 --- 02/2022
Peking University B.S., School of Mathematical Science Advisor: Zaiwen Wen	09/2016 --- 07/2020

RESEARCH INTEREST

Machine Learning, Statistical Learning Theory, Information Theory

AWARDS AND HONORS

Finalist for Two-Sigma Fellowship	05/2024
MIT EECS Seneff-Zue Fellowship	09/2020
Gold Medal in 57 th International Mathematical Olympiad	07/2016
Gold Medal in Applied Math in S.-T. Yau College Mathematics Contests (Rank 1)	06/2019

Journal Publications and Submissions

- Gaussian Sequence Model: Sample Complexities of Testing, Estimation and LFHT
Zeyu Jia, Yury Polyanskiy
submitted to *Annals of Statistics* (AoS)
- Rate of convergence of the smoothed empirical Wasserstein distance (in submission)
Adam Block, **Zeyu Jia**, Yury Polyanskiy, Alexander Rakhlin
Annales de l'Institut Henri Poincaré (AIHP) 2025
- On the Intrinsic Dimension Estimation
Adam Block, **Zeyu Jia**, Yury Polyanskiy, Alexander Rakhlin
Journal of Machine Learning Research (JMLR) 2022
- Search Direction Correction with Normalized Gradient Makes First-Order Methods Faster
Yifei Wang, **Zeyu Jia**, Zaiwen Wen
Journal of Scientific Computing 2022

Conference Publications

5. Outcome-Based Online Reinforcement Learning: Algorithms and Fundamental Limits
Fan Chen, **Zeyu Jia**, Alexander Rakhlin, Tengyang Xie
Neural Information Processing Systems (NeurIPS) 2025
6. Trajectory Bellman Residual Minimization: A Simple Value-Based Method for LLM Reasoning
Yurun Yuan, Fan Chen, **Zeyu Jia**, Alexander Rakhlin, Tengyang Xie
Neural Information Processing Systems (NeurIPS) 2025
7. On the Minimax Regret of Sequential Probability Assignment via Square-Root Entropy
Zeyu Jia, Yury Polyanskiy, Alexander Rakhlin
Conference on Learning Theory (COLT) 2025
8. Do We Need to Verify Step by Step? Rethinking Process Supervision from a Theoretical Perspective
Zeyu Jia, Alexander Rakhlin, Tengyang Xie
International Conference on Machine Learning (ICML) 2025
9. How Does Variance Shape the Regret in Contextual Bandits?
Zeyu Jia, Jian Qian, Alexander Rakhlin, Chen-Yu Wei
Neural Information Processing Systems (NeurIPS) 2024
10. Offline Reinforcement Learning: Role of State Aggregation and Trajectory Data
Zeyu Jia, Alexander Rakhlin, Ayush Sekhari, Chen-Yu Wei
Conference on Learning Theory (COLT) 2024
11. When is Agnostic Reinforcement Learning Statistically Tractable?
Zeyu Jia, Gene Li, Alexander Rakhlin, Ayush Sekhari, Nathan Srebro
Neural Information Processing Systems (NeurIPS) 2023
12. Entropic characterization of optimal rates for learning Gaussian mixtures
Zeyu Jia, Yury Polyanskiy, Yihong Wu
Conference on Learning Theory (COLT) 2023
13. Linear Reinforcement Learning with Ball Structure Action Space
Zeyu Jia, Randy Jia, Dhruv Madeka, Dean P Foster
Algorithmic Learning Theory (ALT) 2023
14. Model-Based Reinforcement Learning with Value-Targeted Regression
Alex Ayoub, **Zeyu Jia**, Csaba Szepesvári, Lin F. Yang, Mengdi Wang
International Conference on Machine Learning (ICML) 2020
15. Minimax-optimal off-policy evaluation with linear function approximation
Yaqi Duan, **Zeyu Jia**, Mengdi Wang
International Conference on Machine Learning (ICML) 2020
16. Feature-based q-learning for two-player stochastic games
Zeyu Jia, Lin F Yang, Mengdi Wang
Optimization Foundations for Reinforcement Learning Workshop at NeurIPS 2019

Preprints

17. A Gapped Scale-Sensitive Dimension and Lower Bounds for Offset Rademacher Complexity
Zeyu Jia, Yury Polyanskiy, Alexander Rakhlin

Working and Visiting Experience

Apple , Cupertino, CA Working on machine learning applications	2025 Summer
Amazon , New York, NY Working on topics in reinforcement learning	2022 Summer
Cardinal Operations , Beijing, China Working on algorithms design for warehousing logistics	2020 Summer

Teaching Experience

I have worked as a teaching assistant (TA) in the following courses:

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| • 6.7920: Reinforcement Learning: Foundations and Methods , MIT
Course Instructor: Munther A. Dahleh & Cathy Wu | 2025 Fall |
| • 6.3700: Introduction to Probability , MIT
Course Instructor: Lizhong Zheng | 2024 Fall |
| • IDS160: Mathematical Statistics , MIT
Course Instructor: Martin Wainwright and Alexander Rakhlin | 2024 Spring |

Professional Services

Conference Reviewer:

- Algorithmic Learning Theory (ALT)
- Conference on Learning Theory (COLT)
- Neural Information Processing Systems (NeurIPS)
- International Conference on Machine Learning (ICML)
- International Conference on Learning Representation (ICLR)
- Artificial Intelligence and Statistics Conference (AISTATS)

Journal Reviewer:

- Journal of Machine Learning Research (JMLR)
- IEEE Transaction on Information Theory

COMPUTING SKILLS AND OTHERS

- **Computer skills:** **Programming languages:** C/C++, Python, MATLAB, Mathematica
 Other Software and Operation Systems: Linux
- **Languages:** Chinese (native), English (fluent)