

# Zhiyuan Fan

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## RESEARCH INTERESTS

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- Practical and Provable Approaches to Mastering or Finding Equilibria in Competitive Games

## EDUCATION

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- **Massachusetts Institute of Technology.** Sept. 2023 - present
  - Ph.D. student in Computer Science, advised by Gabriele Farina.
  - **Master of Science in Electrical Engineering and Computer Science.** Feb. 2026
- **Tsinghua University.** Sept. 2019 - June. 2023
  - **Bachelor of Computer Science and Technology.**
  - Institute for Interdisciplinary Information Science. (Also known as Yao Class, founded by Prof. Andrew Yao in 2005.)
  - Overall GPA 3.91/4.00, Top 25%.
  - Relevant Courses: Machine Learning (A), Algorithm Design (A+), Theory of Computation (A+), Fundamentals of Cryptography (A+), Game Theory (A), Mathematics for Computer Science (A), Causal and Statistical Learning (A).
  - **Yao Award**, Silver Medal. *Yao Award is established to recognize the outstanding performances of Yao Class students.*

## WORK EXPERIENCE

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- **Internship** at ByteDance Summer 2025
  - Researched reliable scaling ( $\mu P$ ) in LLMs, characterizing how learning rate and weight decay jointly affect training.

## PUBLICATIONS

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(\* stands for equal contribution)

- **Online Learning and Equilibrium Computation with Ranking Feedback**  
Mingyang Liu\*, Yongshan Chen\*, **Zhiyuan Fan**, Gabriele Farina, Asuman E. Ozdaglar & Kaiqing Zhang  
Accepted at the 14th International Conference on Learning Representations (ICLR 2026).  
**Oral.**
- **On the Universal Near Optimality of Hedge in Combinatorial Settings**  
**Zhiyuan Fan\***, Arnab Maiti\*, Kevin Jamieson, Lillian J. Ratliff & Gabriele Farina  
Accepted at the 39th Annual Conference on Neural Information Processing Systems (NeurIPS 2025).  
**Spotlight.**
- **Efficient Near-Optimal Algorithm for Online Shortest Paths in Directed Acyclic Graphs with Bandit Feedback**  
Arnab Maiti\*, **Zhiyuan Fan\***, Kevin Jamieson, Lillian J. Ratliff & Gabriele Farina  
Accepted at the 38th Annual Conference on Learning Theory (COLT 2025).
- **On the Optimality of Dilated Entropy and Lower Bounds for Online Learning in Extensive-Form Games.**  
**Zhiyuan Fan**, Christian Kroer & Gabriele Farina  
Accepted at the 38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024).
- **Achieving Constant Regret in Linear Markov Decision Processes.**  
Weitong Zhang\*, **Zhiyuan Fan\***, Jiafan He & Quanquan Gu  
Accepted at the 38th Annual Conference on Neural Information Processing Systems (NeurIPS 2024).
- **Efficient Algorithms for Sparse Moment Problems without Separation.**  
**Zhiyuan Fan** & Jian Li. (alphabet order)  
Accepted at the 36th Annual Conference on Learning Theory (COLT 2023).
- **On the Interplay Between Misspecification and Sub-optimality Gap in Linear Contextual Bandits.**  
Weitong Zhang, Jiafan He, **Zhiyuan Fan** & Quanquan Gu.  
Accepted at the 40th International Conference on Machine Learning (ICML 2023).

- **OpenFE: Automated Feature Generation beyond Expert-level Performance.**  
Tianping Zhang, Zheyu Zhang, **Zhiyuan Fan**, Haoyan Luo, Fengyuan Liu, Wei Cao & Jian Li.  
Accepted at the 40th International Conference on Machine Learning (ICML 2023).
- **The Exact Complexity of Pseudorandom Functions and the Black-Box Natural Proof Barrier.**  
**Zhiyuan Fan**, Jiayu Li & Tianqi Yang. (alphabet order)  
Accepted at the 54th Annual ACM Symposium on Theory of Computing (STOC 2022).  
**Best Student Paper** co-winner.

## AWARDS AND HONORS

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- **Yao Award**, Silver Medal (3/62) 2022
- **STOC 2022**, Danny Lewin Best Student Paper Award 2022
- Scholarship of Tsinghua University
  - Scientific Innovation Excellence Award 2022
  - Academic Excellence Award (twice) 2021, 2022
- International Collegiate Programming Contest
  - ICPC Asia Shanghai Regional Contest, Gold Medal (rank 2) 2019
  - ICPC Asia-East Continent Final Contest, Gold Medal 2019
- China Collegiate Programming Contest
  - CCPC Qinghuangdao Regional Contest, Gold Medal (rank 2) 2019
- Chinese National Olympiad in Informatics, Gold Medal (twice) 2017, 2018

## TEACHING EXPERIENCE

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- **Teaching Assistant** of Nonlinear Optimization at MIT Spring 2025
- **Teaching Assistant** of Topics in Multiagent Learning at MIT Fall 2024
- **Teaching Assistant** of Fundamentals of Cryptography at Tsinghua University Spring 2023

## PROFESSIONAL SERVICE

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- **Conference Reviewing:** ICLR 2025, 2026; ICML 2025, 2026; Neurips 2024, 2025; ALT 2024, 2025, 2026

## SKILLS

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- **Programming Languages:** C++, Python, Go, SQL, MATLAB
- **Tools and Frameworks:** PyTorch, Matplotlib,  $\LaTeX$ , Git, MySQL