

Jiayi Huang

Master's Student at Peking University

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🌐 Website ✦ 🎓 Google Scholar ✦ 🐙 Github

RESEARCH INTERESTS

Statistics, Machine Learning, Reinforcement Learning

EDUCATION

Peking University (PKU)

Center for Data Science

Sep. 2021 – Jul. 2024 (Exp.)

Beijing, China

- M.S. in *Data Science (Statistics)*
Advisor: Prof. Liwei Wang & Prof. Mohan Chen

University of Science and Technology of China (USTC)

School of the Gifted Young (SGY)

Sep. 2017 – Jul. 2021

Hefei, China

- B.S. in *Statistics*
Overall GPA: **3.99**/4.3 (**91.95**) | Rank: **2**/75 in Statistics
- B.E. in *Computer Science (Dual)*
Overall GPA: **3.90**/4.3 (**91.24**)

University of Washington (UW)

Department of Electrical Engineering

Jul. 2018 – Aug. 2018

Seattle, WA

- Summer School of *Global Electrical Engineering Program*

EXPERIENCE

University of California, Los Angeles (UCLA)

Research Intern, advised by Prof. Lin F. Yang

Mar. 2023 – Dec. 2023

Remote

- Worked on reinforcement learning with heavy-tailed rewards.
 - We proposed two computationally efficient algorithms for heavy-tailed linear bandits and linear MDPs, based on a novel concentration inequality for adaptive Huber regression.
 - These algorithms achieve both minimax optimal and instance-dependent regret bounds.
 - We provided a lower bound to demonstrate the optimality.
 - We also conducted numerical experiments to corroborate the computational efficiency.
- Worked on reinforcement learning with general function approximation.
 - We proposed an algorithm for model-based reinforcement learning with general function approximation, which features the novel combination of weighted value-targeted regression and a high-order moment estimator.
 - Our proposed algorithm achieves a both horizon-free and instance-dependent regret bound.
 - It is both statistically and computationally efficient.
 - We also conducted numerical experiments to validate the theoretical findings.

Peking University

Teaching Assistant

Beijing, China

- Machine Learning (Turing Class) Spring 2022
- University of California, Los Angeles** Apr. 2021 – Sep. 2021
Research Intern, advised by Prof. Lin F. Yang *Remote*
- Worked on linear bandits with super heavy-tailed rewards.
 - We proposed a generic algorithmic framework for super heavy-tailed linear bandits, which adopts a novel mean-of-medians estimator to handle the challenge of heavy-tailedness.
 - We showed that our algorithmic framework is provably efficient for regret minimization.
 - We also conducted numerical experiments to validate the effectiveness of our framework.

HONORS AND AWARDS

Peking University

- Graduate Special Academic Scholarship Oct. 2022

University of Science and Technology of China

- Outstanding Graduate (USTC and Anhui Province) Jun. 2021
- National Scholarship Dec. 2020
- Nomination for Guo Moruo Scholarship Oct. 2020
- Outstanding Student Scholarship — Silver Award Dec. 2018, 2019

PROFESSIONAL SERVICES

Conference Reviewer

AISTATS 2024

Journal Reviewer

Artificial Intelligence, Machine Intelligence Research

PUBLICATIONS

- [1] Jiayi Huang, Han Zhong, Liwei Wang, Lin F. Yang. “Horizon-Free and Instance-Dependent Regret Bounds for Reinforcement Learning with General Function Approximation.” [AISTATS 2024](#). [[Arxiv](#)] [[Code](#)]
- [2] Jiayi Huang, Han Zhong, Liwei Wang, Lin F. Yang. “Tackling Heavy-Tailed Rewards in Reinforcement Learning with Function Approximation: Minimax Optimal and Instance-Dependent Regret Bounds.” [NeurIPS 2023](#). [[Arxiv](#)] [[Code](#)]
- [3] Han Zhong, Jiayi Huang, Lin F. Yang, Liwei Wang. “Breaking the Moments Condition Barrier: No-Regret Algorithm for Bandits with Super Heavy-Tailed Payoffs.” [NeurIPS 2021](#). [[Arxiv](#)] [[Code](#)]

STANDARDIZED TESTS

TOEFL

105 (30 + 27 + 23 + 25)

Jul. 2023

GRE

324 (154 + 170) + 3.5

Jul. 2023