Liangyu Zhang

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Research Interests

Reinforcement Learning, Statistical Learning Theory, Distributionally Robust Optimization

Education

Peking University, Beijing, China — 9/2019 – Present
Ph.D. in Data Science,
Academy for Advanced Interdisciplinary Studies,
Advisor: Prof. Zhihua Zhang.

Peking University, Beijing, China — 9/2015 – 7/2019
B.S. in Statistics,
School of Mathematical Sciences.

Honors and Scholarships

Yizheng Alumni Scholarship, Peking University — 2017
May 4th Scholarship, Peking University — 2018
Presidential Scholarship, Peking University — 2023

Publications and Preprints

Towards Theoretical Understandings of Robust Markov Decision Processes: Sample Complexity and Asymptotics
Wenhao Yang, **Liangyu Zhang**, Zhihua Zhang. (α-β order.)
The Annals of Statistics 50 (6) 3223 - 3248, December 2022.

Semi-infinitely Constrained Markov Decision Processes
Liangyu Zhang, Yang Peng, Wenhao Yang, Zhihua Zhang.
Advances in Neural Information Processing Systems 35 (2022): 16808-16820..

Semi-infinitely Constrained Markov Decision Processes and Efficient Reinforcement Learning
Liangyu Zhang, Yang Peng, Wenhao Yang, Zhihua Zhang.
Accepted by *IEEE TPAMI*.
arXiv version: https://arxiv.org/abs/2305.00254.

Statistical Estimation of Confounded Linear MDPs: An Instrumental Variable Approach
Miao Lu, Wenhao Yang, **Liangyu Zhang**, Zhihua Zhang. (α-β order.)
arXiv version: https://arxiv.org/abs/2209.05186.

Estimation and Inference in Distributional Reinforcement Learning
Liangyu Zhang, Yang Peng, Jiadong Liang, Wenhao Yang, Zhihua Zhang.
Under review at *The Annals of Statistics*.
arXiv version: https://arxiv.org/abs/2309.17262.

Working Papers

Federated Reinforcement Learning with Constraint Heterogeneity
Hao Jin, **Liangyu Zhang**, Zhihua Zhang.

Sample Complexities and Asymptotics of Approximate Distributional Reinforcement Learning
Liangyu Zhang, Zhihua Zhang.

Professional Services

Reviewer for ICML 2023, NeurIPS 2023, ICLR 2024 and Journal of Machine Learning Research.

Teaching experience

Teaching assistant, Peking University Fall 2020
High Dimensional Probability