WENHAO YANG

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ACADEMIC EXPERIENCE

- **Stanford University** *September 2023 - Present*
  Postdoc (Advisor: Jose Blanchet)
- **University of Alberta** *February 2022 - February 2023*
  Visiting Ph.D. Student (Advisor: Martha White)
- **Peking University, Beijing, China** *September 2018 - July 2023*
  Academy for Advanced Interdisciplinary Studies
  Ph.D. in Data Science (Statistics) (Advisor: Zhihua Zhang)
- **Peking University, Beijing, China** *September 2014 - July 2018*
  School of Mathematical Sciences
  B.S. in Statistics

RESEARCH INTERESTS

- My research interests lie in `statistical learning` and its applications in data-driven decision making problems, including reinforcement learning, deep learning, and stochastic control.

SELECTED PUBLICATIONS

* denotes equal contribution or alphabetical order.

1. A Sequential Stopping Procedure for Statistical Estimation with Infinite Variance
   Jose Blanchet*, Peter Glynn*, **Wenhao Yang***
   To be submitted to **Bernoulli**.
2. Statistical Inference for the Stochastic Gradient Descent with Infinite Variance
   Jose Blanchet*, Peter Glynn*, **Wenhao Yang***
   To be submitted to **Journal of the Royal Statistical Society, Series B**
3. Wasserstein Distributionally Robust Policy Learning with Continuous Context
   Jose Blanchet*, Miao Lu*, **Wenhao Yang***, Zhengyuan Zhou*
   To be submitted to **Management Science**
4. Limit Theorems for Stochastic Gradient Descent with Infinite Variance
   Jose Blanchet*, Aleksandar Mijatović*, **Wenhao Yang***
   The Annals of Applied Probability, Major Revision
5. Towards Theoretical Understandings of Robust Markov Decision Processes: Sample Complexity and Asymptotics
   Wenhao Yang, Liangyu Zhang, Zhihua Zhang
   The Annals of Statistics, 2022, Vol. 50, No. 6, 3223-3248
6. On the Convergence of FedAvg on Non-IID Data
   Xiang Li*, Kaixuan Huang*, **Wenhao Yang***, Shusen Wang, Zhihua Zhang
   International Conference on Learning Representations (**ICLR**) 2020 (**Oral**)
   Cited by 3297

PUBLICATIONS

* denotes equal contribution or alphabetical order.
Δ denotes supervised student paper.

1. Estimation and Inference in Distributional Reinforcement Learning
   Liangyu Zhang, Yang Peng, Jiadong Liang, **Wenhao Yang**$^{\Delta}$, Zhihua Zhang
   The Annals of Statistics, Accepted.

2. Distributionally Robust Optimization as a Scalable Framework to Characterize Extreme Value Distributions
   Patrick Kendal Kuiper, Ali Hasan, **Wenhao Yang**, Jose Blanchet, Vahid Tarokh, Yuting Ng, Hoda Bidkhori
   The 40th Conference on Uncertainty in Artificial Intelligence (**UAI**), 2024

3. Semi-Infinitely Constrained Markov Decision Processes and Provably Efficient Reinforcement Learning
   Liangyu Zhang, Yang Peng, **Wenhao Yang**, Zhihua Zhang
   IEEE Transactions on Pattern Analysis & Machine Intelligence (**TPAMI**), 1-14

4. Semiparametrically Efficient Off-Policy Evaluation in Linear Markov Decision Processes
   Chuhan Xie, **Wenhao Yang**$^{\Delta}$, Zhihua Zhang
   International Conference on Machine Learning (**ICML**) 2023

5. Regularization and Variance-Weighted Regression Achieves Minimax Optimality in Linear MDPs: Theory and Practice
   Toshinori Kitamura, Tadashi Kozuno, Yunhao Tang, Nino Vieillard, Michal Valko, **Wenhao Yang**, Jincheng Mei, Pierre MENARD, Mohammad Gheshlaghi Azar, Remi Munos, Olivier Pietquin, Matthieu Geist, Csaba Szepesvari, Wataru Kumagai, Yutaka Matsuo
   International Conference on Machine Learning (**ICML**) 2023

6. Polyak-Ruppert-Averaged Q-Learning is Statistically Efficient
   Xiang Li, **Wenhao Yang**, Jiadong Liang, Zhihua Zhang, Michael I. Jordan
   International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2023

7. Semi-infinitely Constrained Markov Decision Processes
   Liangyu Zhang, Yang Peng, **Wenhao Yang**, Zhihua Zhang
   Neural Information Processing Systems (**NeurIPS**) 2022

8. Federated Reinforcement Learning with Environment Heterogeneity
   Hao Jin, Yang Peng, **Wenhao Yang**, Shusen Wang, Zhihua Zhang
   International Conference on Artificial Intelligence and Statistics (**AISTATS**) 2022

9. A Regularized Approach to Sparse Optimal Policy in Reinforcement Learning
   Wenhao Yang*, Xiang Li*, Zhihua Zhang
   Neural Information Processing Systems (**NeurIPS**) 2019

PREPRINTS

* denotes equal contribution or alphabetical order.

1. Avoiding Model Estimation in Robust Markov Decision Processes with a Generative Model
   Wenhao Yang, Han Wang, Tadashi Kozuno, Scott M. Jordan, Zhihua Zhang

2. KL-Entropy-Regularized RL with a Generative Model is Minimax Optimal
   Tadashi Kozuno, **Wenhao Yang**, Nino Vieillard, Toshinori Kitamura, Yunhao Tang, Jincheng Mei, Pierre Ménard, Mohammad Gheshlaghi Azar, Michal Valko, Rémi Munos, Olivier Pietquin, Matthieu Geist, Csaba Szepesvári

3. Statistical Estimation of Confounded Linear MDPs: An Instrumental Variable Approach
   Miao Lu*, **Wenhao Yang***, Liangyu Zhang*, Zhihua Zhang*

4. Finding the Near Optimal Policy via Adaptive Reduced Regularization in MDPs
   Wenhao Yang, Xiang Li, Guangzeng Xie, Zhihua Zhang
   Workshop on Reinforcement Learning Theory at ICML 2021

5. Communication Efficient Decentralized Training with Multiple Local Updates
   Xiang Li, **Wenhao Yang**, Shusen Wang, Zhihua Zhang

PROFESSIONAL SERVICES

- Session Organizer and Chair at Joint Statistical Meetings in 2025.
- Journal reviewer for:
  Journal of Machine Learning Research, Operations Research, Mathematics of Operations Research, Transactions on Machine Learning Research, Automatica.
- Conference Reviewer for:
  NeurIPS 2022, 2020 & 2019; ICLR 2023, 2022 & 2021; ICML 2022, 2021 & 2020; AISTATS 2023.

FUNDING

- AFOSR Multi-University Research Initiative (MURI) Grant, FA9550-20-1-0397
  Role: Contributor to annual report under the supervision of Prof. Jose Blanchet (Stanford University).

PRESENTATIONS

1. "Calibration of Statistical Inference for Stochastic Gradient Descent with Infinite Variance"
   - 2025 INFORMS Annual Meeting, Oct 2025.
   - 2025 Joint Statistical Meetings, August 2025.
   - 2025 International Conference On Continuous Optimization, July 2025.
   - 2025 INFORMS Applied Probability Society Conference, June 2025.
   - 2025 Conference on Extreme Value Analysis, June 2025.
2. "Wasserstein Distributionally Robust Policy Learning with Continuous Context"
   - 2024 INFORMS Annual Meeting, Oct 2024.
3. "Robust Markov Decision Processes without Model Estimation"
   - 2023 INFORMS Annual Meeting, Oct 2023.
4. "Towards Theoretical understandings of Robust MDPs: Sample Complexity and Asymptotics"
   - School of Mathematical Sciences, Peking University, Jan 2022.
   - The China-R Conference 2022, Nov 2022.

TEACHING EXPERIENCES

- *"Statistical and Algorithmic Optimality in Stochastic Optimization"*, COMM 682, Fall 2025, UBC Sauder School of Business, Guest Lecturer
- *"High-dimensional Probability"*, Mini-course, Spring 2020, PKU, Instructor
- *"Reinforcement Learning: Theory and Algorithms"*, Fall 2019, PKU, Teaching Assistant

MENTORING EXPERIENCES

- **Miao Lu**, Ph.D. student at Stanford 2023-2024
- **Chuhan Xie**, Ph.D. student at Peking University. 2022-2023
- **Liangyu Zhang**, Ph.D. student at Peking University, now assistant professor at the School of Statistics and Management at Shanghai University of Finance and Economics. 2021-2023
- **Yang Peng**, Ph.D. student at Peking University. 2021-2022
- **Hao Jin**, Ph.D. student at Peking University. 2021-2022

SELECTED AWARDS AND SCHOLARSHIP

- 2025 Extreme Value Analysis Conference Travel Award *June 2025*
- First Prize, Peking University Scholarship *October 2020*
- NeurIPS Travel Award *December 2019*
- Principal Scholarship, Peking University *October 2019*
- May Forth Scholarship, Peking University *October 2017*
- Honorable Winner, Mathematical Contest In Modeling *May 2017*
- Yizheng Scholarship, Peking University *October 2016*
- Meritorious Winner, Mathematical Contest In Modeling *May 2016*
- Second Prize, Outstanding Freshman Scholarship, Peking University *October 2014*
- Top 4, College Entrance Examination, Sichuan *June 2014*

LIST OF REFEREES

1. Jose Blanchet (jose.blanchet@stanford.edu)
   Professor, Department of Management Science and Engineering
   Stanford University
2. Peter Glynn (glynn@stanford.edu)
   Professor, Department of Management Science and Engineering
   Stanford University
3. Aleksandar Mijatović (a.mijatovic@warwick.ac.uk)
   Professor, Department of Statistics
   University of Warwick
4. Zhengyuan Zhou (zz26@stern.nyu.edu)
   Associate Professor, Stern School of Business
   New York University
5. Zhihua Zhang (zhzhang@math.pku.edu.cn)
   Professor, School of Mathematical Sciences
   Peking University