Yuling Yan

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Education

Massachusetts Institute of Technology, MA, USA *July. 2023 - Aug. 2024*

- Norbert Wiener Postdoctoral Associate, Institute for Data, Systems and Society
- Advisors: Philippe Rigollet and Martin Wainwright

Princeton University, NJ, USA *Sept. 2018 - June 2023*

- Ph.D. in Operations Research and Financial Engineering
- Advisors: Yuxin Chen and Jianqing Fan

Peking University, Beijing, China *Sept. 2014 - July 2018*

- B.S. in Statistics, School of Mathematical Sciences

Visiting Positions

Massachusetts Institute of Technology, MA, USA *Sep. 2022 - Dec. 2022*

- Visiting student at Department of Mathematics, hosted by Professor Philippe Rigollet

University of California, Berkeley, CA, USA *Aug. 2021 - Nov. 2021*

- Visiting student at Simons Institute for the Theory of Computing

Research Interests

1. High-dimensional statistics: estimation [J7., J8., J10.] and inference [J5., J9.]
2. Non-convex optimization [J7., J8., J10., C2., J3.]
3. Reinforcement learning [J4., J6., C1., J2.]
4. Game theory and mechanism design [J4., J1.]
5. Optimal transport and Wasserstein gradient flow [C2., J3.]
6. Applications in economics and social science [J11., J1.]

Journal Papers

J1. **Yuling Yan**, Weijie J. Su, Jianqing Fan, "The Isotonic Mechanism for Exponential Family Estimation," arXiv preprint arXiv:2304.11160, 2023.

J2. Gen Li, **Yuling Yan**, Yuxin Chen, Jianqing Fan, "Minimax-Optimal Reward-Agnostic Exploration in Reinforcement Learning," arXiv preprint arXiv:2304.07278, 2023.

J3. **Yuling Yan***, Kaizheng Wang*, Philippe Rigollet ($*$ = **equal contribution**), "Learning Gaussian Mixtures Using Wasserstein-Fisher-Rao Gradient Flow," arXiv preprint arXiv:2301.01766, under major revision at *Annals of Statistics*, 2023.

J4. **Yuling Yan**, Gen Li, Yuxin Chen, Jianqing Fan, "Model-based Reinforcement Learning for Offline Zero-Sum Markov Games," arXiv preprint arXiv:2206.04044, under major revision at *Operations Research*, 2023.

J5. **Yuling Yan**, Yuxin Chen, Jianqing Fan, "Inference for Heteroskedastic PCA with Missing Data," arXiv preprint arXiv:2107.12365, under major revision at *Annals of Statistics*, 2023 (**2022 ASA Statistical Learning and Data Science Section Best Student Paper Award**).

J6. **Yuling Yan**, Gen Li, Yuxin Chen, Jianqing Fan, "The Efficacy of Pessimism in Asynchronous Q-Learning," arXiv preprint arXiv:2203.07368, under revision at *IEEE Transactions on Information Theory*, 2023.

J7. Yuxin Chen, Jianqing Fan, Cong Ma, **Yuling Yan (alphabetical order)**, "Bridging Convex and Nonconvex Optimization in Robust PCA: Noise, Outliers, and Missing Data," *Annals of Statistics*, vol. 49, no. 5, pp. 2948-2971, 2021.

J8. Yuxin Chen, Jianqing Fan, Bingyan Wang, **Yuling Yan (alphabetical order)**, "Convex and Nonconvex Optimization Are Both Minimax-Optimal for Noisy Blind Deconvolution under Random Designs," *Journal of the American Statistical Association*, vol. 118, no. 542, pp. 858-868, 2023.

J9. Yuxin Chen, Jianqing Fan, Cong Ma, **Yuling Yan (alphabetical order)**, "Inference and Uncertainty Quantification for Noisy Matrix Completion," *Proceedings of the National Academy of Science*, vol. 116, no. 46, pp. 22931-22937, 2019.

J10. Yuxin Chen, Yuejie Chi, Jianqing Fan, Cong Ma, **Yuling Yan (alphabetical order)**, "Noisy Matrix Completion: Understanding Statistical Guarantees for Convex Relaxation via Nonconvex Optimization," *SIAM Journal on Optimization*, vol. 30, no. 4, pp. 3098-3121, 2020.

J11. **Yuling Yan**, Bret Hanlon, Sebastien Roch, Karl Rohe, "Asymptotic Seed Bias in Respondent-driven Sampling," *Electronic Journal of Statistics*, vol. 14, no. 1, pp. 1577-1610, 2020.

Conference Papers

C1. Bingyan Wang*, **Yuling Yan***, Jianqing Fan ($*$ = **equal contribution**), "Sample-Efficient Reinforcement Learning for Linearly-Parameterized MDPs with a Generative Model," *Neural Information Processing Systems (NeurIPS)*, 2021.

C2. Kaizheng Wang, **Yuling Yan**, Mateo Díaz, "Efficient clustering for stretched mixtures: landscape and optimality," *Neural Information Processing Systems (NeurIPS)*, 2020.

Awards and Honors

Norbert Wiener Postdoctoral Fellowship, MIT *2023*

IMS Hannan Graduate Student Travel Award *2023*

Gold Medal in Student Poster Competition, Rutgers University *2023*
— *Conference on Recent Advances in Statistics and Data Science with a Celebration of Professors Regina Liu and Cun-Hui Zhang's Special Birthdays*

Charlotte Elizabeth Procter Honorific Fellowship, Princeton University *2022*

Best Student Paper Award, ASA Statistical Learning and Data Science Section *2022*

Best Poster Award, Simons Institute for the Theory of Computing, UC Berkeley *2022*
— *Workshop on Statistics in the Big Data Era in Honor of Professor Peter Bickel's 80th Birthday*

Best Poster Award, Conference on New Advances in Statistics and Data Science *2022*

Finalist for Two Sigma Ph.D. Fellowship *2021*

Yangxin Lotus Virtue Scholarship, Peking University *2017*

The May 4th Scholarship, Peking University *2016*

Samsung Scholarship, No. 2 High School Affiliated to East China Normal University *2013*

Invited Talks

T1. "Owner-Assisted Mechanisms for Exponential Family Estimation," ICSA Applied Statistics Symposium, Ann Arbor, MI, Jun 2023.

T2. "Inference and Uncertainty Quantification for Low-Rank Models," *Department Seminar*, Department of Technology, Operations and Statistics, NYU Stern School of Business, Feb 2023.

T3. "Inference and Uncertainty Quantification for Low-Rank Models," *Econometrics and Statistics Workshop*, University of Chicago Booth School of Business, Feb 2023.

T4. "Inference and Uncertainty Quantification for Low-Rank Models," *Department Seminar*, Department of Statistics, Rutgers University, Jan 2023.

T5. "Inference and Uncertainty Quantification for Low-Rank Models," *Department Seminar*, Department of Statistics, University of Wisconsin-Madison, Jan 2023.

T6. "Inference and Uncertainty Quantification for Low-Rank Models," *Department Seminar*, Department of Statistics, UC Davis, Jan 2023.

T7. "Inference and Uncertainty Quantification for Low-Rank Models," *Young Data Science Researcher Seminar*, ETH Zurich, Dec 2022.

T8. "Inference and Uncertainty Quantification for Low-Rank Models," *Department Seminar*, Department of Data Science and Operations, Marshall School of Business, University of Southern California, Dec 2022.

T9. "Inference for Heteroskedastic PCA with Missing Data," *CMStatistics*, King's College London, Dec 2022.

T10. "Inference and Uncertainty Quantification for Low-Rank Models," *Department Colloquia*, Department of Mathematics, University of Maryland, Nov 2022.

T11. "Inference and Uncertainty Quantification for Low-Rank Models," *Statistics Seminar*, Department of Mathematics, University of Maryland, Nov 2022.

T12. "Model-based Reinforcement Learning for Offline Zero-Sum Markov Games," *INFORMS Annual Meeting*, Indianapolis, IN, Oct 2022.

T13. "Inference for Heteroskedastic PCA with Missing Data," *INFORMS Annual Meeting*, Indianapolis, IN, Oct 2022.

T14. "Model-based Reinforcement Learning for Offline Zero-Sum Markov Games," *ORIE Young Researchers Workshop*, Cornell University, Oct 2022.

T15. "Inference for Heteroskedastic PCA with Missing Data," *Lunch Seminar*, Department of Statistics, Harvard University, Oct 2022.

T16. "Inference for Heteroskedastic PCA with Missing Data," *Joint Statistical Meeting*, Washington DC, Aug 2022.

T17. "Bridging Convex and Nonconvex Optimization in Robust PCA: Noise, Outliers, and Missing Data," *INFORMS Optimization Society Meeting*, Greenville, SC, Mar 2022.

T18. "Inference for Heteroskedastic PCA with Missing Data," *Department Seminar*, Department of Statistics and Applied Probability, UC Santa Barbara, Mar 2022.

T19. "Bridging Convex and Nonconvex Optimization in Robust PCA: Noise, Outliers, and Missing Data," *Two Sigma Ph.D. Research Symposium*, online, Dec 2020.

T20. "Bridging Convex and Nonconvex Optimization in Robust PCA: Noise, Outliers, and Missing Data," *INFORMS Annual Meeting*, online, Nov 2020.

T21. "Bridging Convex and Nonconvex Optimization in Robust PCA: Noise, Outliers, and Missing Data," *ORFE Graduate Student Seminar*, Princeton University, Oct 2020.

PROFESSIONAL SERVICE

- Organizing committee for *Conference on Statistical Foundations of Data Science and their Applications in celebration of Jianqing Fan's 60th Birthday*, May 2023.
- Session chair for *2022 INFORMS Annual Meeting* at Indianapolis, IN.
- Journal reviewer for *Annals of Statistics*, *Journal of the American Statistical Association*, *Biometrika*, *Management Science*, *IEEE Transactions on Information Theory*, *IEEE Transactions on Signal Processing*, *Journal of Multivariate Analysis*, *IEEE Transactions on Computational Imaging*, *IEEE Signal Processing Letters*, *Journal of Nonparametric Statistics*.
- Conference reviewer for *Neural Information Processing Systems* (NeurIPS 2021-2023), *International Conference on Machine Learning* (ICML 2020-2023), *IEEE International Symposium on Information Theory* (ISIT 2020-2021), *International Conference on Learning Representations* (ICLR 2021), *Annual Conference on Information Sciences and Systems* (CISS 2020).

TEACHING EXPERIENCE

- "Probability and Stochastic Systems" by Professor Ramon van Handel, Spring 2021, Teaching Assistant
- "Large-Scale Optimization for Data Science" by Professor Yuxin Chen, Fall 2019, Teaching Assistant
- "Statistical Learning" by Professor Jinzhu Jia, Fall 2017, Teaching Assistant