

# Yuling Yan

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## APPOINTMENTS

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**Massachusetts Institute of Technology**, MA, USA

July. 2023 - Now

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

## EDUCATION

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**Princeton University**, NJ, USA

Sept. 2018 - June 2023

- Ph.D. in Operations Research and Financial Engineering
- Advisors: Yuxin Chen and Jianqing Fan
- Dissertation: Statistical Learning and Optimal Decision Making under Uncertainty

**Peking University**, Beijing, China

Sept. 2014 - July 2018

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

## RESEARCH INTERESTS

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Statistics, optimization, reinforcement learning, optimal transportation, and their applications in social sciences and biology.

## AWARDS

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IMS Lawrence D. Brown Ph.D. Student Award, Institute of Mathematical Statistics	2024
Norbert Wiener Postdoctoral Fellowship, MIT	2023
Charlotte Elizabeth Procter Honorific Fellowship, Princeton University	2022
Best Student Paper Award (Statistical Learning & Data Science), American Statistical Association	2022
Two Sigma Ph.D. Fellowship Finalist	2021
Yang Xin Lotus Virtue Fellowship, Peking University	2017
The May 4th Fellowship, Peking University	2016
Samsung Fellowship, No. 2 High School Affiliated to East China Normal University	2013

## JOURNAL PUBLICATIONS

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- J1. **Yuling Yan**, Gen Li, Yuxin Chen, Jianqing Fan, “The Efficacy of Pessimism in Asynchronous Q-Learning,” accepted to *IEEE Transactions on Information Theory*, 2023.
- J2. 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.
- J3. 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.
- J4. 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.
- J5. **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.

- J6. 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.

## CONFERENCE PUBLICATIONS

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- 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.

## PREPRINTS

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- P1. **Yuling Yan**, Weijie J. Su, Jianqing Fan, “The Isotonic Mechanism for Exponential Family Estimation,” arXiv preprint arXiv:2304.11160, 2023.
- P2. Gen Li, **Yuling Yan**, Yuxin Chen, Jianqing Fan, “Minimax-Optimal Reward-Agnostic Exploration in Reinforcement Learning,” arXiv preprint arXiv:2304.07278, 2023.
- P3. **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.
- P4. **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.
- P5. **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**).

## INVITED TALKS

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- 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

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- 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 2020-2022), *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).

## VISITING POSITIONS

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| <b>Massachusetts Institute of Technology</b> , MA, USA                                 | <i>Sep. 2022 - Dec. 2022</i> |
| • Visiting student at Department of Mathematics, hosted by Professor Philippe Rigollet |                              |
| <b>University of California, Berkeley</b> , CA, USA                                    | <i>Aug. 2021 - Nov. 2021</i> |
| • Visiting student at Simons Institute for the Theory of Computing                     |                              |

## TEACHING EXPERIENCE

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- "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