

# Kaizheng Wang

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## ACADEMIC POSITION

**Columbia University, New York, NY, USA**

Jul. 2020 -

Assistant Professor, Department of Industrial Engineering and Operations Research

Member, Data Science Institute

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## EDUCATION

**Princeton University, Princeton, NJ, USA**

Sep. 2015 - Jun. 2020

Ph.D. in Operations Research and Financial Engineering, Department of ORFE

Advisor: Jianqing Fan

**Peking University, Beijing, China**

Sep. 2011 - Jul. 2015

B.S. in Mathematics and Applied Mathematics, School of Mathematical Sciences

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## PUBLICATIONS AND PREPRINTS

Preprints under review ( $\alpha$ - $\beta$ : author names are sorted alphabetically)

- Adaptive Data Fusion for Multi-task Non-smooth Optimization.  
Lam, H., Wang, K., Wu, Y. & Zhang, Y. ( $\alpha$ - $\beta$ )  
arXiv:2210.12334, 2022.
- Adaptive and robust multi-task learning.  
Duan, Y. & Wang, K. ( $\alpha$ - $\beta$ )  
arXiv:2202.05250, 2022.
- Clustering a mixture of Gaussians with unknown covariance.  
Davis, D., Díaz, M. & Wang, K. ( $\alpha$ - $\beta$ )  
arXiv:2110.01602, 2021.

Journal publications

- An  $l_p$  theory of PCA and spectral clustering.  
Abbe, E., Fan, J. & Wang, K. ( $\alpha$ - $\beta$ )  
**Annals of Statistics** 50 (4): 2359-2385, 2022.

- Communication-efficient accurate statistical estimation.  
Fan, J., Guo, Y. & Wang, K. ( $\alpha$ - $\beta$ )  
**Journal of American Statistical Association**, Accepted, 2021+.
- Modern data modeling: Cross-fertilization of the two cultures.  
Fan, J., Ma, C., Wang, K. & Zhu, Z. ( $\alpha$ - $\beta$ )  
**Observational Studies** 7 (1): 65-76, 2021.
- Robust high dimensional factor models with applications to statistical machine learning.  
Fan, J., Wang, K., Zhong, Y. & Zhu, Z. ( $\alpha$ - $\beta$ )  
**Statistical Science** 36(2): 303-327, 2021.
- Entrywise eigenvector analysis of random matrices with low expected rank.  
Abbe, E., Fan, J., Wang, K., & Zhong, Y. ( $\alpha$ - $\beta$ )  
**Annals of Statistics** 48 (3): 1452-1474, 2020.
- Implicit regularization in nonconvex statistical estimation: Gradient descent converges linearly for phase retrieval, matrix completion and blind deconvolution.  
Ma, C., Wang, K., Chi, Y., & Chen, Y.  
**Foundations of Computational Mathematics** 20: 451–632, 2020.  
Short version accepted by **International Conference on Machine Learning (ICML)** 2018.
- Factor-adjusted regularized model selection.  
Fan, J., Ke, Y., & Wang, K. ( $\alpha$ - $\beta$ )  
**Journal of Econometrics** 216 (1): 71-85, 2020.
- Comment on “A tuning-free robust and efficient approach to high-dimensional regression”.  
Fan, J., Ma, C., & Wang, K. ( $\alpha$ - $\beta$ )  
**Journal of American Statistical Association** 115 (532): 1720-1725, 2020.
- Distributed estimation of principal eigenspaces.  
Fan, J., Wang, D., Wang, K., & Zhu, Z. ( $\alpha$ - $\beta$ )  
**Annals of Statistics** 47 (6): 3009-3031, 2019.
- Spectral method and regularized MLE are both optimal for Top-K ranking.  
Chen, Y., Fan, J., Ma, C., & Wang, K. ( $\alpha$ - $\beta$ )  
**Annals of Statistics** 47 (4): 2204-2235, 2019.
- Stochastic representations for the wave equation on graphs and their scaling limits.  
Wang, K.  
**Journal of Mathematical Analysis and Applications** 449 (1): 808-828, 2017.

- On the Neumann problem for harmonic functions in the upper half plane.  
Wang, K.  
**Journal of Mathematical Analysis and Applications** 419 (2): 839-848, 2014.

#### Conference publications

- Efficient clustering for stretched mixtures: landscape and optimality.  
Wang, K., Yan, Y. & Díaz, M.  
**Neural Information Processing Systems (NeurIPS)** 33: 21309-21320, 2020.
- Implicit regularization in nonconvex statistical estimation: Gradient descent converges linearly for phase retrieval and matrix completion.  
Ma, C., Wang, K., Chi, Y., & Chen, Y.  
**International Conference on Machine Learning (ICML)** 80: 3345-3354, 2018.

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#### GRANTS AND AWARDS

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|---|-------------|
| • NSF Grant DMS-2210907, Role: Principal Investigator                                 | 2022 – 2025 |
| Statistical and Computational Tools for Analyzing High-Dimensional Heterogeneous Data |             |
| • Harold W. Dodds Fellowship (1%) - Princeton University                              | 2019 - 2020 |
| • Gordon Y. S. Wu Fellowship - Princeton University                                   | 2015 - 2019 |
| • SEAS Award for Excellence - Princeton University                                    | 2018        |

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#### PROFESSIONAL SERVICES

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|---|-----------------------|
| • Area chair, NeurIPS 2022  | Dec. 2022             |
| • Session chair, INFORMS Annual Meeting 2022  | Oct. 2022             |
| • Cluster chair, 2022 CORS-INFORMS International Conference   | Jun. 2022             |
| • Area chair, NeurIPS 2021  | Dec. 2021             |
| • Session chair, INFORMS Annual Meeting 2021  | Oct. 2021             |
| • Session chair, INFORMS Annual Meeting 2020  | Nov. 2020             |
| • Co-organizer, Wilks statistics seminar, Princeton University  | Jul. 2018 - May. 2019 |
| • Co-organizer, the 6 <sup>th</sup> Princeton Day of Statistics   | Jul. 2018 - Nov. 2018 |
| • Reviewer for the following journals: Annals of Statistics, Biometrika, Foundations of Computational Mathematics, Journal of Business & Economic Statistics, Journal of Econometrics, Journal of Machine Learning Research, Journal of the American Statistical Association, Journal of the Royal Statistical Society: Series B, Mathematics of Operations Research, Operations Research, etc. |                       |

- Reviewer for the following conferences: Conference on Learning Theory (COLT), International Conference on Machine Learning (ICML), IEEE International Symposium on Information Theory (ISIT), Neural Information Processing Systems (NeurIPS), ACM-SIAM Symposium on Discrete Algorithms (SODA), etc.

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## TEACHING EXPERIENCES

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At Columbia University:

- IEOR E8100 - High-Dimensional Probability with Applications (PhD): Spring 2021, Spring 2023;
- IEOR E4102 - Stochastic Modeling for Management Science and Engineering (Master): Spring 2023;
- IEOR E4307 - Statistics and Data Analysis (Undergraduate): Fall 2020, Fall 2021;
- IEOR E3106 - Stochastic Systems and Applications (Undergraduate): Fall 2021, Fall 2022.

At Princeton University, as Assistants in Instruction (AIs):

- ORF 525 - Statistical Learning and Nonparametric Estimation (Graduate): Spring 2019;
- ORF 363 - Computing and Optimization for Physical and Social Sciences (Undergraduate): Fall 2016;
- ORF 309 - Probability and Stochastic Systems (Undergraduate): Spring 2017, Spring 2018;
- ORF 245 - Fundamentals of Statistics (Undergraduate): Fall 2017, Fall 2018 (Head AI).