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

EDUCATION

Princeton University, Princeton, NJ, USA Sep. 2015 - Jun. 2020

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

Peking University, Beijing, China Sep. 2011 - Jul. 2015

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

PUBLICATIONS AND PREPRINTS

Preprints under review (α-β: author names are sorted alphabetically)

- Pseudo-Labeling for Kernel Ridge Regression under Covariate Shift
  Kaizheng Wang.
  arXiv: 2302.10160, 2023.
- Learning Gaussian Mixtures Using the Wasserstein-Fisher-Rao Gradient Flow
  Yuling Yan*, Kaizheng Wang*, Philippe Rigollet. (* = equal contribution)
  arXiv: 2301.01766, 2023.
- Variable Clustering via Distributionally Robust Nodewise Regression
  Kaizheng Wang, Xiao Xu, Xun Yu Zhou. (α-β)
  arXiv: 2212.07944, 2022.
- Adaptive Data Fusion for Multi-task Non-smooth Optimization.
  Henry Lam, Kaizheng Wang, Yuhang Wu, Yichen Zhang. (α-β)
  arXiv:2210.12334, 2022.
- Clustering a Mixture of Gaussians with Unknown Covariance.
  Damek Davis, Mateo Díaz, Kaizheng Wang. (α-β)

arXiv:2110.01602, 2021.

Journal publications

- Adaptive and Robust Multi-task Learning.
  Yaqi Duan, Kaizheng Wang. (α-β)
  Annals of Statistics, 2023+ (Accepted).
- Communication-Efficient Accurate Statistical Estimation.
  Jianqing Fan, Yongyi Guo, Kaizheng Wang. (α-β)
  Journal of American Statistical Association 118 (542): 1000-1010, 2023.
- An l_p Theory of PCA and Spectral Clustering.
  Emmanuel Abbe, Jianqing Fan, Kaizheng Wang. (α-β)
  Annals of Statistics 50 (4): 2359-2385, 2022.
- Modern Data Modeling: Cross-Fertilization of the Two Cultures.
  Jianqing Fan, Cong Ma, Kaizheng Wang, Ziwei Zhu. (α-β)
  Observational Studies 7 (1): 65-76, 2021.
- Robust High Dimensional Factor Models with Applications to Statistical Machine Learning.
  Jianqing Fan, Kaizheng Wang, Yiqiao Zhong, Ziwei Zhu. (α-β)
  Statistical Science 36(2): 303-327, 2021.
- Entrywise Eigenvector Analysis of Random Matrices with Low Expected Rank.
  Emmanuel Abbe, Jianqing Fan, Kaizheng Wang, Yiqiao Zhong. (α-β)
  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.
  Cong Ma, Kaizheng Wang, Yuejie Chi, Yuxin Chen.
  Foundations of Computational Mathematics 20: 451–632, 2020.
  Short version accepted by **International Conference on Machine Learning (ICML)** 2018.
- Factor-Adjusted Regularized Model Selection.
  Jianqing Fan, Yuan Ke, Kaizheng Wang (α-β)
  Journal of Econometrics 216 (1): 71-85, 2020.
- Comment on "A Tuning-Free Robust and Efficient Approach to High-Dimensional Regression".
  Jianqing Fan, Cong Ma, Kaizheng Wang (α-β)
  Journal of American Statistical Association 115 (532): 1720-1725, 2020.

- Distributed Estimation of Principal Eigenspaces.
  Jianqing Fan, Dong Wang, Kaizheng Wang, Ziwei Zhu. (α-β)
  Annals of Statistics 47 (6): 3009-3031, 2019.
- Spectral Method and Regularized MLE are both Optimal for Top-K Ranking.
  Yuxin Chen, Jianqing Fan, Cong Ma, Kaizheng Wang (α-β)
  Annals of Statistics 47 (4): 2204-2235, 2019.
- Stochastic Representations for the Wave Equation on Graphs and Their Scaling Limits.
  Kaizheng Wang
  Journal of Mathematical Analysis and Applications 449 (1): 808-828, 2017.
- On the Neumann Problem for Harmonic Functions in the Upper Half Plane.
  Kaizheng Wang
  Journal of Mathematical Analysis and Applications 419 (2): 839-848, 2014.

Conference publications

- Efficient Clustering for Stretched Mixtures: Landscape and Optimality.
  Kaizheng Wang, Yuling Yan, Mateo Díaz.
  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.
  Cong Ma, Kaizheng Wang, Yuejie Chi, Yuxin Chen.
  International Conference on Machine Learning (ICML) 80: 3345-3354, 2018.

GRANTS AND AWARDS

- NSF Grant DMS-2210907 ($179,999), Role: Principal Investigator 2022 – 2025
  Statistical and Computational Tools for Analyzing High-Dimensional Heterogeneous Data
- Second Place Award in the 2023 INFORMS Blue Summit Supplies Data Challenge 2023
- 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

PROFESSIONAL SERVICES

- Area chair/meta-reviewer: COLT 2024, ICML 2023, NeurIPS 2021 - 2022
- Session chair: INFORMS Annual Meeting 2020 - 2022

- Cluster chair, 2022 CORS-INFORMS International Conference Jun. 2022
- Co-organizer, Wilks statistics seminar, Princeton University Jul. 2018 - May. 2019
- Co-organizer, the 6th Princeton Day of Statistics Jul. 2018 - Nov. 2018
- Reviewer for the following journals: Annals of Statistics, Bernoulli, Biometrika, Foundations of Computational Mathematics, IEEE Transactions on Information Theory, 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, Management Science, 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.

TEACHING EXPERIENCES

At Columbia University:

- IEOR E8100 - High-Dimensional Probability with Applications (PhD): Spring 2021, 2023 & 2024;
- IEOR E4106 - Stochastic Models (Master): Spring 2024;
- IEOR E4102 - Stochastic Modeling for Management Science and Engineering (Master): Spring 2023;
- IEOR E4307 - Statistics and Data Analysis (Undergraduate): Fall 2020 & 2021;
- IEOR E3106 - Stochastic Systems and Applications (Undergraduate): Fall 2021 - 2023.

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

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