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Education

Postdoctoral Researcher. University of California, Berkeley. 2019-now. Advisor: Michael I. Jordan.
Ph.D. Department of Statistics, Stanford, 2019. Advisor: John C. Duchi. GPA: 4.2/4.3.
B.S. (with distinction) Department of Mathematics, Peking University, 2014. GPA: 3.9/4.0.
B.A. (double degree) China Center for Economic Research, Peking University, 2014.

Publications

Journal Publications¹

1. J. C. Duchi and F. Ruan. Asymptotic optimality in stochastic optimization. *Annals of Statistics*, 49(1):21–48, 2021.
2. I. Lemhadri, F. Ruan, and R. Tibshirani. Lassonet: A neural network with feature sparsity. *Journal of Machine Learning Research*, 22(127):1–29, 2021.
3. L. T. Liu, F. Ruan, H. Mania, and M. I. Jordan. Bandit learning in decentralized matching markets. *Journal of Machine Learning Research*, to appear, 2021.
4. K. Khamaru, A. Pananjady, F. Ruan, M. J. Wainwright, and M. I. Jordan. Is temporal difference learning optimal? An instance-dependent analysis. *SIAM Journal on Mathematics of Data Science*, to appear, 2021.
5. J. C. Duchi and F. Ruan. Stochastic methods for composite and weakly convex optimization problems. *SIAM Journal on Optimization*, 28:3229–3259, 2018.
6. J. C. Duchi and F. Ruan. Solving (most) of a set of quadratic equalities: Composite optimization for robust phase retrieval. *Information and Inference*, iay015, 2018.
7. J. C. Duchi, K. Khosravi, and F. Ruan. Multiclass classification, information, divergence, and surrogate risk. *Annals of Statistics*, 46:3246–3275, 2018.
8. B. Kaneshiro*, F. Ruan*, C. W. Baker, and J. Berger. Characterizing listener engagement with popular songs using large-scale music discovery data. *Frontiers in Psychology*, 8:416, 2017.
9. S. Osher, F. Ruan, J. Xiong, Y. Yao, and W. Yin. Sparse recovery via differential inclusions. *Applied and Computational Harmonic Analysis*, 41(2):436–469, 2016.

Conference Publications²

1. J. Duchi and F. Ruan. A constrained risk inequality for general losses. In *International Conference on Artificial Intelligence and Statistics*, pages 802–810. PMLR, 2021. (oral presentation)
2. I. Lemhadri, F. Ruan, and R. Tibshirani. Lassonet: Neural networks with feature sparsity. In *International Conference on Artificial Intelligence and Statistics*, pages 10–18. PMLR, 2021

¹Default author ordering is alphabetical, and * denotes equal contribution.

²Default author ordering is alphabetical, and * denotes equal contribution.

3. J. C. Duchi, F. Ruan, and C. Yun. Minimax bounds on stochastic batched convex optimization. In *Proceedings of the Thirty First Annual Conference on Computational Learning Theory (COLT)*, 2018. (27.2% acceptance rate).
4. J. C. Duchi, K. Khosravi, and F. Ruan. Information measures, experiments, multi-category hypothesis tests, and surrogate losses. In *The 54th Allerton Conference on Communication, Control, and Computing*, 2016.

Preprints & Papers under Review³

1. F. Ruan, K. Liu, and M. I. Jordan. Taming nonconvexity in kernel feature selection—favorable properties of the laplace kernel. *arXiv preprint arXiv:2106.09387*, 2021.
2. J. C. Duchi and F. Ruan. The right complexity measure in locally private estimation: It is not the Fisher information. *Under revision at the Annals of Statistics*, 2021.
3. A. Montanari, F. Ruan, and J. Yan. Adapting to unknown noise distribution in matrix denoising. *under revision at Bernoulli*, 2021.
4. K. Liu and F. Ruan. A self-penalizing objective function for scalable interaction detection. *arXiv preprint arXiv:2011.12215*, 2020.
5. A. Montanari, F. Ruan, Y. Sohn, and J. Yan. The generalization error of max-margin linear classifiers: High-dimensional asymptotics in the overparametrized regime. *Under revision at the Annals of Statistics*, 2019.
6. J. C. Duchi and F. Ruan. Composite optimization, model misspecification and single index modeling. *Draft available upon request (on arXiv soon)*, 2021.
7. M. I. Jordan, K. Liu, and F. Ruan. Nonnegative garrotte without garrotte? the “automatic” sparsity of kernel feature selection. *Draft available upon request (on arXiv soon)*, 2021.

Softwares

1. F. Ruan, J. Xiong and Y. Yao R Package *LIBRA*, available at <https://cran.r-project.org/web/packages/Libra/index.html>
2. I. Lemhadri, F. Ruan, L. Abraham and R. Tibshirani Python Package, available at <https://lassonet.ml/>
3. K. Liu and F. Ruan Python Package, available at <https://keli-feng.github.io/package/metric-learning.zip>
4. K. Liu, F. Ruan and R. Tibshirani R Package *FCLUSTER*.

Awards

Statistics Department Teaching Award, Stanford University, 2017.

Stanford Graduate Fellowship (E.K. Potter Fellowship), Stanford University, 2014.

Outstanding Graduates in Prominent Talents in Applied Mathematics Training Program, Peking University, 2014.

Silver Medal in Romanian Master of Mathematical Olympiad, 2009.

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Teaching Experience

Course Served as Session Lecturer at Summer School

Lectures on Stochastic Convex Optimization, PCMI, Summer 2017.

Course Served as Teaching Assistant at Stanford University

Statistics 318, Modern Markov Chains. Winter 2019.

Statistics 60, Introduction to Statistical Methods: Precalculus, Fall 2018.

Statistics 202, Data Mining and Analysis, Winter 2018.

Computer Science 229T, Statistical Learning Theory, Winter 2017.

Statistics 310A, Theory of Probability, Autumn 2016.

Statistics 300, Theory of Statistics, Autumn 2015.

Statistics 208, Introduction to the Bootstrap, Spring 2015.

Talks and Presentations

Conference

- 2020 Artificial Intelligence and Statistics (AISTats) (online)
- 2020 Joint Statistical Meetings (JSM) (online)
- 2018 Conference on Learning Theory (COLT) (Stockholm, Sweden)
- 2017 IMS/ASA Spring Research Conference (Rutgers University, New Brunswick, NJ, USA)

Seminars

- 2021 Statistics Department Seminar, University of California, Berkeley
- 2021 Statistics Department Seminar, ETH Zurich
- 2021 Statistics Group Seminar, HongKong University of Science and Technology
- 2021 International Seminar on Selective Inference
- 2020 Information Theory Group Seminar (BLISS), University of California, Berkeley
- 2019 Information Theory Forum, Stanford University
- 2019 Biostatistics Department Seminar, University of California, Berkeley
- 2019 Data Science Institute Department Seminar, University of California, San Diego
- 2019 Applied Mathematics and Statistics Department Seminar, Johns Hopkins University
- 2019 ISYE Department Seminar, Georgia Institute of Technology
- 2019 EE Department Seminar, University of Michigan
- 2019 EE Department Seminar, Princeton University
- 2019 Statistics Department Seminar, University of Wisconsin-Madison
- 2019 Statistics Department Seminar, The Wharton School at the University of Pennsylvania
- 2019 Statistics Department Seminar, University of Southern California, Marshall
- 2019 Statistics Department Seminar, Rutgers University
- 2018 Machine Learning Group Seminar, Stanford University
- 2017 Statistics Department Seminar, HongKong University of Science and Technology
- 2017 Statistics Department Retreat Seminar, Stanford University
- 2017 Machine Learning Group Seminar, Stanford University
- 2016 Statistics Department Retreat Seminar, Stanford University

Reviewing

Journal Reviewing *Annals of Statistics (AOS)*, *Journal of the American Statistical Association (JASA)*, *Bernoulli*, *Mathematical Programming*, *SIAM Journal of Optimization (SIOPT)*, *Operations Research*, *Mathematics of Operations Research*, *Journal of Machine Learning Research (JMLR)*, *IEEE Transactions on Information Theory (TIT)*, *IEEE Transactions on Signal Processing (TSP)*, *IEEE Journal on Selected Areas in Information Theory (JSAIT)*, *IEEE Transactions on Knowledge and Data Engineering*, *IMA Journal on Numerical Analysis*, *PLOS ONE*, *Frontiers in Psychology*

Conference Reviewing International Conference on Machine Learning (ICML), Neural Information Processing Systems (NIPS), Artificial Intelligence and Statistics (AISTats), Conference on Learning Theory (COLT), ACM Symposium on Theory of Computing (STOC), IEEE International Symposium on Information Theory (ISIT).

Outside Interests

Hiking, piano, card-games, table tennis