Academic positions

University of Wisconsin–Madison
• Assistant professor, Department of Statistics
  School of Computer, Data, and Information Sciences
  Madison, Wisconsin
  Aug. 2022 – present

Stanford University
• Postdoc in Dept. of Statistics and Dept. of Electrical Engineering
  Advisor: Prof. Andrea Montanari, Prof. David Donoho
  Stanford, California
  Sep. 2019 – present

Princeton University
• Teaching assistant and research assistant
  Princeton, New Jersey
  Sep. 2015 – July. 2018

Education

Princeton University
• Ph.D. from Dept. of Operations Research and Financial Engineering
  Advisor: Prof. Jianqing Fan
    • GPA: 3.95/4
    • Funded by Dodds Fellowship (top 1%)
  Sep. 2014 – Sep. 2019

Peking University
• Bachelor of Science in Mathematics
  Beijing, China
  Sep. 2010 – July. 2014
  • GPA: 3.9/4.0; Top 5%; Graduated with honors
  • Enrolled in Applied Mathematics Program for Elite Students, advised by Prof. Weinan E.

Research Interests

• Deep learning theory and algorithms
  Over-parametrization, interpolating models, gradient descent algorithms, generalization errors.

• Low-rank structure recovery
  Network analysis, factor models, matrix completion, principal component analysis under spiked model.

• Nonconvex optimization
  Synchronization problems, pairwise measurement data, semidefinite relaxation.

Publications and research papers (Google Scholar Link)

• Montanari, A, Zhong, Y. and Zhou, K. (2022+)
  Tractability from overparametrization: The example of the negative perceptron,
  Preprint. https://arxiv.org/abs/2110.15824

• Montanari, A and Zhong, Y. (2022)
  The Interpolation Phase Transition in Neural Networks: Memorization and Generalization under Lazy Training,
  Annals of Statistics, to appear, 2022. http://arxiv.org/abs/2007.12826

• Fan, J. Cong, M. and Zhong, Y. (2021)
  A Selective Overview of Deep Learning,
  Statistical Science, 36.2 264 – 290, May 2021.
  https://doi.org/10.1214/20-STS783

• Fan, J. Wang, K. Zhong, Y. Zhu, Z. (2021)
  Robust High Dimensional Factor Models with Applications to Statistical Machine Learning,
  Statistical Science. 36.2: 303–327, May 2021.
  https://doi.org/10.1214/20-STS785
• Abbe, E. Fan, J. Wang, K. Zhong, Y. (2020)
Entrywise Eigenvector Analysis of Random Matrices with Low Expected Rank,
*Annals of Statistics* 48.3: 1452.
https://doi.org/10.1214/19-aos1854

• Avery, J. J., Starck, J., Zhong, Y., Avery, J. D., & Cooper, J. (2020)
Is your own team is against you: Implicit and explicit attitudes in criminal defense.
*The Journal of Social Psychology*: 1-17.
https://doi.org/10.1080/00224545.2020.1845593

• Zhong, Y. and Boumal, N. (2018)
Near-optimal Bounds For Phase Synchronization,
*SIAM Journal on Optimization*, 28.2: 989-1016, 2018.
https://epubs.siam.org/doi/abs/10.1137/17M1122025
Received 2018 SIAM Student Paper Prize (news link).

• Fan, J. Wang, W. and Zhong, Y. (2018)
An $\ell_\infty$ Eigenvector Perturbation Bound and Its Application to Robust Covariance Estimation,
*Journal of Machine Learning Research*; 18(207): 1-42, 2018.
http://www.jmlr.org/papers/volume18/16-140/16-140.pdf

• Fan, J. Wang, W. and Zhong, Y. (2018)
Robust Covariance Estimation for Approximate Factor Models,
*Journal of Econometrics*, 208.1: 5–22.
https://doi.org/10.1016/j.jeconom.2018.09.003

• Fan, J. Zhong, Y. (2018+)
Optimal Subspace Estimation Using Overidentifying Vectors via Generalized Method of Moments,
*Preprint*. https://arxiv.org/abs/1805.02826

• Zhong, Y. (2017+)
Eigenvector Under Random Perturbation: A Nonasymptotic Rayleigh-Schrödinger Theory,
*Preprint*. http://arxiv.org/abs/1702.00139

• Jin, C. Wang, Z. Huang, J. Zhong, Y. and Wang, L. (2016)
Differentially Private Data Releasing for Smooth Queries with Synthetic Database Output,
*Journal of Machine Learning Research*, 17(51):1-42, 2016.
http://jmlr.org/papers/volume17/14-388/14-388.pdf

**Teaching Experience**

Instructor at UW–Madison:

• STAT 709: Mathematical Statistics (Fall 2022).

Co-instructor at Stanford University:

• STATS 385: Analyses of Deep Learning (Fall 2019).

Teaching Assistant for various courses at Princeton University:

• ORF 307: Optimization (Spring 2018);
• ORF 245: Fundamentals of Statistics (Spring 2017, Fall 2017);
• ORF 411: Operations and Information Engineering (Fall 2016);
• ORF 360: Decision Modeling in Business Analytics (Spring 2016);
• ORF 527: Stochastic Calculus (Spring 2016);
• ORF 524: Statistical Theory and Methods (Fall 2015).

Honors and Funds

• Research funded by Simons Collaboration on the Theoretical Foundations of Deep Learning (link), 2020–present.
• Best Poster Award on Optimization Algorithms, Princeton, Sep 2018.
• SIAM Student Paper Prize, 2018 SIAM Annual Meeting, July 2018.
• SIAM Student Travel Award, July 2018.
• Graduate School Dodd Fellowship (top 1%), Princeton University, 2018–2019.
• The School of Engineering and Applied Science Travel Fund, Princeton University, Nov 2017.
• First Year Fellowship in Natural Sciences and Engineering, Princeton University, Sep 2014.
• National Innovation Funding, government research funding for undergraduate students in China, Sep 2013.
• Bronze medal, Shing-Tung Yau’s College Student Mathematics Contests, probability and statistics, individual contest, top 7 in China, Aug 2013.
• Silver medal, Shing-Tung Yau’s College Student Mathematics Contests, team contest, top 4 in China, Aug 2013.

Invited Talks

• “Interpolation Phase Transition in Neural Networks: Memorization and Generalization under NT model”, IST colloquium, Stanford University, Sep 2021; Wilks Statistics Seminar, Princeton University, Oct 2021; Neyman Statistics Seminar, UC Berkeley, Oct 2021.
• “A modern statistical perspective on spectral methods and beyond”, Department of Statistics, Harvard University, MA, Mar 2019; Department of Statistics, University of Cambridge, Jan 2019; UC San Diego, Department of Mathematics, Dec 2018.
• “Near-optimal bounds for phase synchronization”, INFORMS annual meeting, CA, Oct 2021; SIAM Annual Meeting, Portland, OR, July 2018.
  –Poster presented at Princeton Day of Optimization, Princeton, Sep 2018.
• “Spectral algorithm without trimming or cleaning works for exact recovery in SBM”, Joint Mathematics Meetings, San Diego, Jan 2018.
  –Poster presented at UCLA Workshop on Deep Learning Techniques, Los Angeles, Feb 2018.
• “Near-optimal bounds for phase synchronization”, IDeAS seminar, The Program in Applied and Computational Mathematics, Princeton University, May 2017.
• “ℓ∞ eigenvector Perturbation and Robust Covariance Estimation” (poster title), Workshop on Networks, Random Graphs and Statistics, Columbia University, May 2016.

Professional Services

• Co-organized Princeton Wilks Statistics Seminars, August 2017 – May 2018.
• Reviewer for Proceedings of the National Academy of Sciences.
• Reviewer for Nature Communications.
• Reviewer for Annals of Statistics.
• Reviewer for SIAM Journal on Optimization.
• Reviewer for Journal of the American Statistical Association.
• Reviewer for *IEEE Transactions on Information Theory*.
• Reviewer for *Journal of Machine Learning Research*.
• Reviewer for *Biometrika*.
• Reviewer for *Electronic Journal of Statistics*.
• Reviewer for *Annals of Applied Probability*.
• Reviewer for *NeurIPS, ICML, AISTATS, COLT, ALT* Conferences.
• Reviewer for *Journal of Econometrics*. 