Yuxin Chen

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Appointments

01/2022–present   University of Pennsylvania
Associate Professor, Statistics and Data Science
Associate Professor, Electrical and Systems Engineering
02/2017–12/2021   Princeton University
Assistant Professor, Electrical and Computer Engineering
Associated Faculty, Computer Science
Associated Faculty, Applied and Computational Mathematics
Associated Faculty, Center for Statistics and Machine Learning

Education

Stanford University, Postdoc in Statistics, 01/2015 – 01/2017, Advisor: Emmanuel J. Candès.
Stanford University, Ph. D. in Electrical Engineering, 06/2010 – 01/2015, Advisor: Andrea J. Goldsmith.
Stanford University, M.S. in Statistics, 04/2011 – 12/2013.
Stanford University, Ph. D. minor in Management Science and Engineering, 06/2010 – 01/2015.
University of Texas at Austin, M.S. in Electrical and Computer Engineering, 08/2008 – 05/2010, Advisor: Jeffrey G. Andrews.
Tsinghua University, B.E. in Electronic Engineering / Microelectronics, 08/2004 – 07/2008 (graduated with high distinction).

Research interest

High-dimensional statistics, information theory, mathematical optimization, reinforcement learning, statistical machine learning, statistical signal processing

Monographs and overview articles

O1. <u>Yuxin Chen</u>, Yuejie Chi, Jianqing Fan, and Cong Ma, "Spectral Methods for Data Science: A Statistical Perspective," *Foundations and Trends for Machine Learning*, vol. 14: No. 5, pp. 566-806, 2021.

O2. Yuejie Chi, Yue Lu, and <u>Yuxin Chen</u>, "Nonconvex Optimization Meets Low-Rank Matrix Factorization: An Overview," *IEEE Transactions on Signal Processing*, vol. 67, no. 20, pp. 5239-5269, October 2019 **(invited overview article)**.

Preprints

P1. Yuchen Zhou, <u>Yuxin Chen</u>, "Deflated HeteroPCA: Overcoming the Curse of Ill-Conditioning in Heteroskedastic PCA," 2023.

P2. Gen Li, Yanxi Chen, Yuejie Chi, H. Vincent Poor, <u>Yuxin Chen</u>, "Fast Computation of Optimal Transport via Entropy-Regularized Extragradient Methods," arXiv preprint arXiv:2301.13006, 2023.

P3. Gen Li, Yuejie Chi, Yuting Wei, <u>Yuxin Chen</u>, "Minimax-Optimal Multi-Agent RL in Markov Games With a Generative Model," arXiv preprint arXiv:2208.10458, 2022.

P4. Yuling Yan, Gen Li, <u>Yuxin Chen</u>, Jianqing Fan, "Model-Based Reinforcement Learning Is Minimax-Optimal for Offline Zero-Sum Markov Games," arXiv preprint arXiv:2206.04044, 2022.

P5. Gen Li, Laixi Shi, <u>Yuxin Chen</u>, Yuejie Chi, Yuting Wei, "Settling the Sample Complexity of Model-Based Offline Reinforcement Learning," arXiv preprint arXiv:2204.05275, 2022.

P6. Yuling Yan, Gen Li, <u>Yuxin Chen</u>, Jianqing Fan, "The Efficacy of Pessimism in Asynchronous Q-learning," arXiv preprint arXiv:2203.07368, 2022.

P7. Yuling Yan, <u>Yuxin Chen</u>, and Jianqing Fan, "Inference for Heteroskedastic PCA with Missing Data," arXiv preprint arXiv:2107.12365, 2021. **(ASA SLDS Student Paper Award, 2021)**

P8. Gen Li, Changxiao Cai, H. Vincent Poor, and <u>Yuxin Chen</u>, "Minimax Estimation of Linear Functions of Eigenvectors in the Face of Small Eigen-Gaps," arXiv preprint arXiv:2104.03298, 2021.

Journal articles (published or accepted)

J1. Changxiao Cai, H. Vincent Poor, and <u>Yuxin Chen</u>, "Uncertainty Quantification for Nonconvex Tensor Completion: Confidence Intervals, Heteroscedasticity and Optimality," *IEEE Transactions on Information Theory*, vol. 69, no. 1, pp. 407-452, Jan. 2023.

J2. Gen Li, Laixi Shi, <u>Yuxin Chen</u>, Yuejie Chi, "Breaking the Sample Complexity Barrier to Regret-Optimal Model-Free Reinforcement Learning," accepted to *Information and Inference: A Journal of the IMA*, 2023+.

J3. Gen Li, Yuting Wei, Yuejie Chi, and <u>Yuxin Chen</u>, "Breaking the Sample Size Barrier in Model-Based Reinforcement Learning with a Generative Model," accepted to *Operations Research*, 2023+.

J4. Gen Li, Changxiao Cai, <u>Yuxin Chen</u>, Yuting Wei, and Yuejie Chi, "Is Q-Learning Minimax Optimal? A Tight Sample Complexity Analysis," accepted to *Operations Research*, 2023+.

J5. <u>Yuxin Chen</u>, Jianqing Fan, Bingyan Wang, and Yuling Yan, "Convex and Nonconvex Optimization Are Both Minimax-Optimal for Noisy Blind Deconvolution under Random Designs," accepted to *Journal of the American Statistical Association*, 2023+.

J6. Gen Li, Yuting Wei, Yuejie Chi, and <u>Yuxin Chen</u>, "Softmax Policy Gradient Methods Can Take Exponential Time to Converge," accepted to *Mathematical Programming*, 2023+.

J7. Wenhao Zhan*, Shicong Cen*, Baihe Huang, <u>Yuxin Chen</u>, Jason D. Lee, Yuejie Chi, "Policy Mirror Descent for Regularized Reinforcement Learning: A Generalized Framework with Linear Convergence," accepted to *SIAM Journal on Optimization*, 2023+ (*=equal contributions).

J8. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and <u>Yuxin Chen</u>, "Sample Complexity of Asynchronous Q-Learning: Sharper Analysis and Variance Reduction," *IEEE Transactions on Information Theory*, vol. 68, no. 1, pp. 448-473, Jan. 2022.

J9. Shicong Cen, Chen Cheng, <u>Yuxin Chen</u>, Yuting Wei, and Yuejie Chi, "Fast Global Convergence of Natural Policy Gradient Methods with Entropy Regularization," *Operations Research*, vol. 70, no. 4, pp. 2563–2578, 2022. **(INFORMS George Nicholson Award Finalist, 2021)**

J10. Changxiao Cai, Gen Li, H. Vincent Poor, and <u>Yuxin Chen</u>, "Nonconvex Low-Rank Tensor Completion from Noisy Data," *Operations Research*, vol. 70, no. 2, pp. 1219–1237, 2022.

J11. Chen Cheng, Yuting Wei, and <u>Yuxin Chen</u>, "Tackling Small Eigen-gaps: Fine-Grained Eigenvector Estimation and Inference under Heteroscedastic Noise," *IEEE Transactions on Information Theory*, vol. 67, no. 11, pp. 7380-7419, Nov. 2021.

J12. <u>Yuxin Chen</u>, Jianqing Fan, Cong Ma, and Yuling Yan, "Bridging Convex and Nonconvex Optimization in Robust PCA: Noise, Outliers, and Missing Data," *Annals of Statistics*, vol. 49, no. 5, pp. 2948-2971, Oct. 2021.

J13. Yanxi Chen, Cong Ma, H. Vincent Poor, and <u>Yuxin Chen</u>, "Learning Mixtures of Low-Rank Models," *IEEE Transactions on Information Theory*, vol. 67, no. 7, pp. 4613-4636, July 2021.

J14. Changxiao Cai, Gen Li, Yuejie Chi, H. Vincent Poor, and <u>Yuxin Chen</u>, "Subspace Estimation from Unbalanced and Incomplete Data Matrices: $\ell_{2,\infty}$ Statistical Guarantees," *Annals of Statistics*, vol. 49, no. 2, pp. 944-967, 2021.

J15. Yuanxin Li, Cong Ma, <u>Yuxin Chen</u>, and Yuejie Chi, "Nonconvex Matrix Factorization from Rank-One Measurements," *IEEE Transactions on Information Theory*, vol. 67, no. 3, pp. 1928-1950, March 2021.

J16. <u>Yuxin Chen</u>, Chen Cheng, and Jianqing Fan, "Asymmetry Helps: Eigenvalue and Eigenvector Analyses Under Asymmetric Random Matrix Perturbation," *Annals of Statistics*, vol. 49, no. 1, pp. 435-458, 2021.

J17. <u>Yuxin Chen</u>, Yuejie Chi, Jianqing Fan, Cong Ma, and Yuling Yan, "Noisy Matrix Completion: Understanding the Stability of Convex Relaxation via Nonconvex Optimization," *SIAM Journal on Optimization*, vol. 30, no. 4, pp. 3098-3121, Oct. 2020.

J18. Boyue Li, Shicong Cen, <u>Yuxin Chen</u>, Yuejie Chi, "Communication-Efficient Distributed Optimization in Networks with Gradient Tracking and Variance Reduction," *Journal of Machine Learning Research*, vol. 21, no. 180, pp. 1-51, 2020.

J19. Cong Ma and Kaizheng Wang, Yuejie Chi, and <u>Yuxin Chen</u>, "Implicit Regularization in Nonconvex Statistical Estimation: Gradient Descent Converges Linearly in Phase Retrieval, Matrix Completion, and Blind Deconvolution," *Foundations of Computational Mathematics*, vol. 20, no. 3, pp. 451-632, June 2020.

J20. <u>Yuxin Chen</u>, Jianqing Fan, Cong Ma, and Yuling Yan, "Inference and Uncertainty Quantification for Noisy Matrix Completion," *Proceedings of the National Academy of Sciences (PNAS)*, vol. 116, no. 46, pp. 22931-22937, Nov. 2019.

J21. Pragya Sur, <u>Yuxin Chen</u>, and Emmanuel J. Candès, "The Likelihood Ratio Test in High-Dimensional Logistic Regression Is Asymptotically a Rescaled Chi-Square," *Probability Theory and Related Fields*, vol. 175, no. 1-2, pp. 487-558, October 2019.

J22. <u>Yuxin Chen</u>, Jianqing Fan, Cong Ma, and Kaizheng Wang, "Spectral Method and Regularized MLE Are Both Optimal for Top-K Ranking," *Annals of Statistics*, vol. 47, no. 4, pp. 2204-2235, August 2019.

J23. <u>Yuxin Chen</u>, Yuejie Chi, Jianqing Fan, and Cong Ma, "Gradient Descent with Random Initialization: Fast Global Convergence for Nonconvex Phase Retrieval," *Mathematical Programming*, vol. 176, no.1-2, pp. 5-37, July 2019.

J24. <u>Yuxin Chen</u>, and Emmanuel J. Candès, "The Projected Power Method: An Efficient Algorithm for Joint Alignment from Pairwise Differences," *Communications on Pure and Applied Mathematics*, vol. 71, no. 8, pp. 1648-1714, August 2018.

J25. <u>Yuxin Chen</u> and Emmanuel J. Candès, "Solving Random Quadratic Systems of Equations Is Nearly as Easy as Solving Linear Systems," *Communications on Pure and Applied Mathematics*, vol. 70, no. 5, pp. 822-883, May 2017.

J26. Tao Zhang, <u>Yuxin Chen</u>, Shanshan Bao, Marcus Alley, John M. Pauly, Brian Hargreaves, Shreyas S. Vasanawala, "Resolving phase ambiguity in dual-echo Dixon imaging using a projected power method," *Magnetic Resonance in Medicine*, vol. 77, no. 5, pp. 2066-2076, May 2017.

J27. <u>Yuxin Chen</u>, Andrea J. Goldsmith and Yonina C. Eldar, "Minimax Capacity Loss under Sub-Nyquist Universal Sampling," *IEEE Transactions on Information Theory*, vol. 63, no. 6, pp. 3348-3367, June 2017.

J28. <u>Yuxin Chen</u>, Changho Suh and Andrea J. Goldsmith, "Information Recovery from Pairwise Measurements," *IEEE Transactions on Information Theory*, vol. 62, no. 10, pp. 5881-5905, Oct. 2016.

J29. Tao Zhang, Joseph Y. Cheng, <u>Yuxin Chen</u>, Dwight G. Nishimura, John M. Pauly, and Shreyas S. Vasanawala, "Robust Self-Navigated Body MRI Using Dense Coil Arrays," *Magnetic Resonance in Medicine*, vol. 76, no. 1, pp. 197-205, July 2016.

J30. <u>Yuxin Chen</u>, Yuejie Chi and Andrea J. Goldsmith, "Exact and Stable Covariance Estimation from Quadratic Sampling via Convex Programming," *IEEE Transactions on Information Theory*, vol. 61, no. 7, pp. 4034-4059, July 2015.

J31. Yuejie Chi, and <u>Yuxin Chen</u>, "Compressive Two-Dimensional Harmonic Retrieval via Atomic Norm Minimization," *IEEE Transactions on Signal Processing*, vol. 63, no. 4, pp. 1030-1042, Feb. 2015.

J32. <u>Yuxin Chen</u>, Andrea J. Goldsmith, and Yonina C. Eldar, "Backing off from Infinity: Performance Bounds via Concentration of Spectral Measure for Random MIMO Channels," *IEEE Transactions on Information Theory*, vol. 61, no. 1, pp. 366-387, January 2015.

J33. <u>Yuxin Chen</u>, and Yuejie Chi, "Robust Spectral Compressed Sensing via Structured Matrix Comple-

tion," *IEEE Transactions on Information Theory*, vol. 60, no. 10, pp. 6576-6601, Oct. 2014.

J34. <u>Yuxin Chen</u>, Andrea J. Goldsmith, and Yonina C. Eldar, "Channel Capacity under Sub-Nyquist Nonuniform Sampling," *IEEE Transactions on Information Theory*, vol. 60, no. 8, pp. 4739-4756, Aug. 2014.

J35. <u>Yuxin Chen</u>, Yonina C. Eldar, and Andrea J. Goldsmith, "Shannon Meets Nyquist: Capacity of Sampled Gaussian Channels," *IEEE Transactions on Information Theory*, vol. 59, no. 8, pp. 4889-4914 , Aug. 2013.

J36. <u>Yuxin Chen</u>, Sanjay Shakkottai, and Jeffrey G. Andrews, "On the Role of Mobility for Multimessage Gossip," *IEEE Transactions on Information Theory*, vol. 59, no. 6, pp. 3953-3970, June 2013.

J37. <u>Yuxin Chen</u>, and Jeffrey G. Andrews, "An Upper Bound on Multi-hop Transmission Capacity with Dynamic Routing Selection," *IEEE Transactions on Information Theory*, vol. 58, no. 6, pp. 3751-3765, June 2012.

Conference papers

C1. Gen Li, Yuejie Chi, Yuting Wei, <u>Yuxin Chen</u>, "Minimax-Optimal Multi-Agent RL in Markov Games With a Generative Model," *Neural Information Processing Systems (NeurIPS)*, December 2022 **(selected as oral)**.

C2. Laixi Shi, Gen Li, Yuting Wei, <u>Yuxin Chen</u>, Yuejie Chi, "Pessimistic Q-Learning for Offline Reinforcement Learning: Towards Optimal Sample Complexity," *International Conference on Machine Learning (ICML)*, July 2022.

C3. Haoran Li, Thomas Guillod, Evan Dogariu, Andrew Nadler, Shukai Wang, Min Luo, Yuxin Chen, Charlie Sullivan, and Minjie Chen, "MagNet: An Open-Source Database for Data-Driven Magnetic Core Loss Modeling," *IEEE Applied Power Electronics Conference (APEC)*, March 2022.

C4. Gen Li, Laixi Shi, <u>Yuxin Chen</u>, Yuantao Gu, Yuejie Chi, "Breaking the Sample Complexity Barrier to Regret-Optimal Model-Free Reinforcement Learning," *Neural Information Processing Systems (NeurIPS)*, December 2021 **(selected as spotlight)**.

C5. Gen Li, <u>Yuxin Chen</u>, Yuejie Chi, Yuantao Gu, and Yuting Wei, "Sample-Efficient Reinforcement Learning Is Feasible for Linearly Realizable MDPs with Limited Revisiting," *Neural Information Processing Systems (NeurIPS)*, December 2021.

C6. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and <u>Yuxin Chen</u>, "Softmax Policy Gradient Methods Can Take Exponential Time to Converge," *Conference on Learning Theory (COLT)*, August 2021.

C7. Gen Li, Changxiao Cai, <u>Yuxin Chen</u>, Yuantao Gu, Yuting Wei, and Yuejie Chi, "Tightening the Dependence on Horizon in the Sample Complexity of Q-Learning," *International Conference on Machine Learning (ICML)*, July 2021.

C8. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and <u>Yuxin Chen</u>, "Breaking the Sample Size Barrier in Model-Based Reinforcement Learning with a Generative Model," *Neural Information Processing Systems (NeurIPS)*, December 2020.

C9. Gen Li, Yuting Wei, Yuejie Chi, Yuantao Gu, and <u>Yuxin Chen</u>, "Sample Complexity of Asynchronous Q-Learning: Sharper Analysis and Variance Reduction," *Neural Information Processing Systems (NeurIPS)*, December 2020.

C10. Haoran Li, Seungjae Ryan Lee, Min Luo, Charles R. Sullivan, <u>Yuxin Chen</u>, and Minjie Chen, "MagNet: A Machine Learning Framework for Magnetic Core Loss Modeling," *IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)*, November 2020.

C11. Changxiao Cai, H. Vincent Poor, and <u>Yuxin Chen</u>, "Uncertainty Quantification for Nonconvex Tensor Completion: Confidence Intervals, Heteroscedasticity and Optimality," *International Conference on Machine Learning (ICML)*, July 2020.

C12. Boyue Li, Shicong Cen, <u>Yuxin Chen</u>, Yuejie Chi, "Communication-Efficient Distributed Optimization in Networks with Gradient Tracking and Variance Reduction," *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Sicily, Italy, June 2020.

C13. Changxiao Cai, Gen Li, H. Vincent Poor, and <u>Yuxin Chen</u>, "Nonconvex Low-Rank Symmetric Tensor Completion from Noisy Data," *Neural Information Processing Systems (NeurIPS)*, Vancouver, Canada, December 2019.

C14. Yuanxin Li, Cong Ma, <u>Yuxin Chen</u>, and Yuejie Chi, "Nonconvex Matrix Factorization from Rank-One Measurements," *International Conference on Artificial Intelligence and Statistics (AISTATS)*, Naha, Okinawa, Japan, April 2019.

C15. Cong Ma, Kaizheng Wang, Yuejie Chi, and <u>Yuxin Chen</u>, "Implicit Regularization in Nonconvex Statistical Estimation: Gradient Descent Converges Linearly in Phase Retrieval and Matrix Completion," *International Conference on Machine Learning (ICML)*, Stockholm, July 2018.

C16. Tao Zhang, <u>Yuxin Chen</u>, Shreyas Vasanawala, Ersin Bayram, "Dual Echo Water-Fat Separation Using Deep Learning," *International Society of Magnetic Resonance in Medicine (ISMRM) Meetings*, Paris, June 2018.

C17. <u>Yuxin Chen</u>, Govinda Kamath, Changho Suh, and David Tse, "Community Recovery in Graphs with Locality," *International Conference on Machine Learning (ICML)*, pp. 689-698, New York, June 2016.

C18. <u>Yuxin Chen</u>, and Emmanuel J. Candès, "Solving Random Quadratic Systems of Equations Is Nearly as Easy as Solving Linear Systems," *Advances in Neural Information Processing Systems (NIPS)*, Montreal, Dec. 2015 **(selected as oral, acceptance rate 0.8)**.

C19. <u>Yuxin Chen</u>, and Changho Suh, "Spectral MLE: Top-K Rank Aggregation from Pairwise Comparisons," *International Conference on Machine Learning (ICML)*, pp. 371-380, Lille, July 2015.

C20. <u>Yuxin Chen</u>, Changho Suh, and Andrea J. Goldsmith, "Information Recovery from Pairwise Measurements: A Shannon-Theoretic Approach," *International Symposium on Information Theory (ISIT)*, pp. 2336-2340, Hongkong, June 2015.

C21. <u>Yuxin Chen</u>, Leonidas Guibas, and Qixing Huang, "Near-Optimal Joint Object Matching via Convex Relaxation," *International Conference on Machine Learning (ICML)*, pp. 100-108, Beijing, June 2014.

C22. Qixing Huang, <u>Yuxin Chen</u>, and Leonidas Guibas, "Scalable Semidefinite Relaxation for Maximum *A Posterior* Estimation," *International Conference on Machine Learning (ICML)*, pp. 64-72, Beijing, June 2014.

C23. <u>Yuxin Chen</u>, and Andrea J. Goldsmith, "Information Recovery from Pairwise Measurements," *International Symposium on Information Theory (ISIT)*, pp. 2012-2016, Honolulu, Hawaii, July 2014.

C24. <u>Yuxin Chen</u>, Yuejie Chi, and Andrea J. Goldsmith, "Robust and Universal Covariance Estimation from Quadratic Measurements via Convex Programming," *International Symposium on Information Theory (ISIT)*, pp. 2017-2021, Honolulu, Hawaii, July 2014.

C25. <u>Yuxin Chen</u>, Yuejie Chi, and Andrea J. Goldsmith, "Estimation of Simultaneously Structured Covariance Matrices from Quadratic Measurements," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 7719-7723, Florence, Italy, May 2014.

C26. <u>Yuxin Chen</u>, Yonina C. Eldar, and Andrea J. Goldsmith, "An Algorithm for Exact Super-resolution and Phase Retrieval," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 754-758, Florence, Italy, May 2014.

C27. <u>Yuxin Chen</u>, Andrea J. Goldsmith, and Yonina C. Eldar, "Minimax Universal Sampling for Compound Multiband Channels," *IEEE International Symposium on Information Theory (ISIT)*, pp. 1032-1036, Istanbul, Turkey, July 2013.

C28. <u>Yuxin Chen</u>, and Yuejie Chi, "Spectral Compressed Sensing via Structured Matrix Completion," *International Conference on Machine Learning (ICML)*, pp. 414 - 422, Atlanta, Georgia, June 2013.

C29. <u>Yuxin Chen</u>, Yonina C. Eldar, and A. J. Goldsmith, "Channel Capacity under General Nonuniform Sampling," *IEEE International Symposium on Information Theory (ISIT)*, pp. 860-864, Cambridge, MA, July 2012.

C30. <u>Yuxin Chen</u>, Yonina C. Eldar and Andrea J. Goldsmith, "Shannon Meets Nyquist: Capacity Limits of Sampled Analog Channels," *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pp. 3104-3107, Prague, Czech Republic, May 2011.

C31. <u>Yuxin Chen</u>, Sanjay Shakkottai, and Jeffrey G. Andrews, "Sharing Multiple Messages over Mobile Networks," *IEEE Infocom*, pp. 658-666, Shanghai, China, April 2011.

C32. <u>Yuxin Chen</u>, and Sujay Sanghavi, "A General Framework for High-dimensional Estimation in the Pres-

ence of Incoherence," *Allerton Conference on Communication, Control, and Computing*, pp. 1570-1576, Monticello, IL, Sep. 2010.

C33. <u>Yuxin Chen</u>, and Jeffrey G. Andrews, "An Upper Bound on Multi-hop Transmission Capacity with Dynamic Route Selection," *IEEE Symposium on Information Theory (ISIT)*, pp. 1718-1722, Austin, TX, June 2010.

Tutorials and short courses

Tu1. "Statistical and Algorithmic Foundations of Reinforcement Learning," CE Course, *Joint Statistical Meetings (JSM) 2023*, cotaught with Yuting Wei and Yuejie Chi, August 2023.

Tu2. "Non-asymptotic Analysis for Reinforcement Learning," Tutorial, *ACM SIGMETRICS*, cotaught with Yuting Wei and Yuejie Chi, June 2023.

Tu3. "Reinforcement Learning: Fundamentals, Algorithms, and Theory," Tutorial, *International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2022*, cotaught with Yuting Wei and Yuejie Chi, May 2022.

Tu4. "Statistical and Algorithmic Foundations of Reinforcement Learning," Tutorial, *ICSA Applied Statistics Symposium 2021*, cotaught with Yuting Wei, Yuejie Chi, and Zhengyuan Zhou, Sep. 2021.

Tu5. "Nonconvex Optimization for High-Dimensional Signal Estimation: Spectral and Iterative Methods," Tutorial, *European Signal Processing Conference (EUSIPCO) 2020*, cotaught with Yuejie Chi and Cong Ma, Jan. 2021.

Tu6. "Taming Nonconvexity in Information Science," Tutorial, *Information Theory Workshop (ITW) 2018*, cotaught with Yuejie Chi, Nov. 2018.

Tu7. "Recent Advances in Nonconvex Methods for High-Dimensional Estimation," Tutorial, *International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2018*, cotaught with Yuejie Chi and Yue Lu, May 2018.

Ph. D. supervision

1. Yuling Yan (Princeton ORFE, co-advised with Jianqing Fan)
2. Yanxi Chen (Princeton ECE, co-advised with H. Vincent Poor)
3. Jack Ji (Princeton ECE, co-advised with Mengdi Wang)
4. Wenhao Zhan (Princeton ECE, co-advised with Jason Lee)
5. Eshaan Nichani (Princeton ECE, co-advised with Jason Lee)
6. Changxiao Cai, *Efficient Estimation and Inference in Nonconvex Low-Complexity Models*, 2021 (now post-doc at UPenn)
7. Cong Ma, *Statistics Meets Nonconvex Optimization: Computational Efficiency and Uncertainty Quantification*, 2020 (now Faculty, Department of Statistics, University of Chicago)

Postdoc supervision

1. Hong Hu (co-advised with Yuting Wei)
2. Gen Li (co-advised with Yuting Wei)
3. Yuchen Zhou
4. Qian Yu, 2021–2022 (co-advised with Jason Lee)
5. Pengkun Yang, 2018–2020 (now Faculty, Center for Statistical Science, Tsinghua University)

Patents

S1. Tao Zhang, <u>Yuxin Chen</u>, John M Pauly, and Shreyas Vasanawala, "Robust dual echo Dixon imaging with flexible echo times," US 10,338,174, July 2019 (licensed to Siemens Healthcare and GE Healthcare).

S2. Tao Zhang, John M Pauly, <u>Yuxin Chen</u>, Joseph Cheng, and Shreyas Vasanawala, "Robust self-navigating MRI using large coil arrays," US 9,857,446, January 2018 (licensed to GE, Siemens, and Philips).

Teaching

Mathematics of High-Dimensional Data (Stat 991-302), UPenn	Spring 2022
Convex Optimization for Statistics and Data Science (STAT/OID 481/581), UPenn	Spring 2022
— *Undergraduate Program Teaching Excellence Award*	
Mathematics of Data Science (ELE 520), Princeton	Fall 2020
Information Signals (ELE 201), Princeton	Fall 2020
Information Signals (ELE 201), Princeton	Spring 2020
Large-Scale Optimization for Data Science (ELE 522), Princeton	Fall 2019
— *Princeton Engineering Commendation List for Outstanding Teaching*	
Mathematics of High-Dimensional Data (ELE 538B), Princeton	Fall 2018
— *Princeton Engineering Commendation List for Outstanding Teaching*	
Probabilistic Systems and Information Processing (ELE 382), Princeton	Fall 2018
Large-Scale Optimization for Data Science (ELE 538B), Princeton	Spring 2018
— *Princeton Engineering Commendation List for Outstanding Teaching*	
Special Topics in Statistical Optimization and Reinforcement Learning (ORF 570 / ELE 578, co-taught with Mengdi Wang), Princeton University	Spring 2018
Statistical Signal Processing (ELE 382), Princeton	Fall 2017
Sparsity, Structure, and Inference (ELE 538B), Princeton	Spring 2017
— *Princeton Engineering Commendation List for Outstanding Teaching*	

Honors and awards

Alfred P. Sloan Research Fellowship	2022
Google Research Scholar Award	2022
Undergraduate Program Teaching Excellence Award	2022
Princeton SEAS Junior Faculty Award	2021
Paper [J8.] is selected as Finalist, INFORMS George Nicholson Award	2021
Princeton Graduate Mentoring Award	2020
ICCM Best Paper Award (Gold Medal)	2020
ARO Young Investigator Program (YIP) Award	2020
Princeton SEAS Innovation Award	2020
ELE522 (Large-Scale Optimization for Data Science) is included in the Princeton Engineering Commendation List for Outstanding Teaching	2020
Finalist for the Best Paper Prize for Young Researchers in Continuous Optimization	2019
ELE538B (Mathematics of High-Dimensional Data) is included in the Princeton Engineering Commendation List for Outstanding Teaching	2019
AFOSR Young Investigator Program (YIP) Award	2019
ELE538B (Large-Scale Optimization for Data Science) is included in the Princeton Engineering Commendation List for Outstanding Teaching	2018
Princeton SEAS Innovation Award	2018
ELE538B (Sparsity, Structure, and Inference) is included in the Princeton Engineering Commendation List for Outstanding Teaching	2017
Finalist for the Bell Labs Prize	2015
Graduated with High Distinction, Tsinghua University	2008

Organization of conferences and workshops (major roles)

Co-director of the 54th Conference on Information Sciences and Systems (CISS), March 2020.

Co-director of the 52nd Conference on Information Sciences and Systems (CISS), March 2018.

Co-organizer of the DataX workshop "Old and New Open Questions in Optimization" at Princeton, 2020.

Co-organizer of the workshop "Bridging Mathematical Optimization, Information Theory, and Data Science" at Princeton Center for Theoretical Science, May 2018.

Co-organizer of the Machine Learning for Signal Processing (MLSP) Data Competition (on Map Synchronization), 2018.

Editorial activities and technical program committees

Associate Editor, Information and Inference, 2022 - present.

Associate Editor, IEEE Transactions on Signal Processing, 2022 - present.

Associate Editor, Journal of the American Statistical Association (JASA), 2023 - present.

Area Chair, Neural Information Processing Systems (NeurIPS), 2023.

Area Chair, International Conference on Machine Learning (ICML), 2023.

Area Chair, Neural Information Processing Systems (NeurIPS), 2022.

Area Chair, International Conference on Machine Learning (ICML), 2022.

Area Chair, International Conference on Learning Representations (ICLR), 2022.

Area Chair, International Conference on Machine Learning (ICML), 2021.

Area Chair, International Conference on Learning Representations (ICLR), 2021.

Area Chair, International Conference on Machine Learning (ICML), 2020.

Technical Program Committee (TPC) Member, IEEE International Symposium on Information Theory (ISIT), 2020.