Arun Jambulapati

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Employment and Education

University of Texas - Austin, Austin, TX — January 2025 – Present
Visiting Researcher, Computer Science

University of Michigan, Ann Arbor, MI — January 2024 – December 2024
Postdoc, Computer Science and Engineering

Simons Institute, Berkeley, CA — August 2023 – December 2023
Simons Research Fellow

University of Washington, Seattle, WA — August 2022 – August 2023
Postdoc, Computer Science and Engineering

Stanford University, Stanford, CA — August 2014 – June 2022
Ph.D, Computational Mathematics and Engineering

University of Memphis, Memphis, TN — January 2009 – May 2014
B.S, Mathematics

Honors and Awards

Simons Research Fellowship — Fall 2023 – December 2023

Gene Golub Dissertation Award, ICME — Spring 2022

Stanford SGF Fellowship — Fall 2017 – Spring 2019

National Science Foundation Graduate Research Fellowship — Fall 2014 – Summer 2017

Publications and Preprints

Awarded Papers

1. Arun Jambulapati, James R. Lee, Yang P. Liu, and Aaron Sidford. Sparsifying sums of norms. In *64th IEEE Annual Symposium on Foundations of Computer Science, FOCS 2023, Santa Cruz, California, USA, November 6-9, 2023*, 2023, **Invited to special issue**

2. Arun Jambulapati and Aaron Sidford. Ultrasparse ultrasparsifiers and faster laplacian system solvers. In *Proceedings of the 2021 ACM-SIAM Symposium on Discrete Algorithms, SODA 2021, Virtual Conference, January 10 - 13, 2021*, 2021, **Invited to special issue**

3. Yair Carmon, Arun Jambulapati, Qijia Jiang, Yujia Jin, Yin Tat Lee, Aaron Sidford, and Kevin Tian. Acceleration with a ball optimization oracle. In *Advances in Neural Information Processing Systems 33: NeurIPS 2020, December 6-12, 2020, virtual*, 2020, **Oral**

4. Arun Jambulapati, Jerry Li, and Kevin Tian. Robust sub-gaussian principal component analysis and width-independent schatten packing. In *Advances in Neural Information Processing Systems 33: NeurIPS 2020, December 6-12, 2020, virtual*, 2020, **Spotlight**

Other Publications

5. Deeksha Adil, Brian Bullins, Arun Jambulapati, and Sushant Sachdeva. Convex optimization with p-norm oracles. In *In submission*

6. Yair Carmon, Arun Jambulapati, Liam O'Carroll, and Aaron Sidford. Extracting dual solutions via primal optimizers. In *Accepted to ITCS 2025*

7. Arun Jambulapati, Sushant Sachdeva, Aaron Sidford, Kevin Tian, and Yibin Zhao. Faster directed laplacian solvers and sparser eulerian sparsifers. *Accepted to SODA '25*

8. Lunjia Hu, Arun Jambulapati, Kevin Tian, and Chutong Yang. Testing calibration in nearly-linear time. In *Accepted to NeurIPS 2024*, 2024

9. Arun Jambulapati, Syamantak Kumar, Jerry Li, Shourya Pandey, Ankit Pensia, and Kevin Tian. Black-box k-to-1-pca reductions: Theory and applications. In *The Thirty Seventh Annual Conference on Learning Theory, June 30 - July 3, 2023, Edmonton, Canada*, 2024

10. Arun Jambulapati, Aaron Sidford, and Kevin Tian. Closing the computational-query depth gap in parallel stochastic convex optimization. In *The Thirty Seventh Annual Conference on Learning Theory, June 30 - July 3, 2023, Edmonton, Canada*, 2024

11. Jose H. Blanchet, Arun Jambulapati, Carson Kent, and Aaron Sidford. Towards optimal running timesfor optimal transport. *Oper. Res. Lett.*, 52, 2024

12. Arun Jambulapati, James R. Lee, Yang P. Liu, and Aaron Sidford. Sparsifying generalized linear models. In *Proceedings of the 56th Annual ACM Symposium on Theory of Computing, STOC 2024, Vancouver, BC, Canada, June 24-28, 2024*, 2024

13. Arun Jambulapati, Victor Reis, and Kevin Tian. Linear-sized sparsifiers via near-linear time discrepancy theory. In *Proceedings of the 2024 ACM-SIAM Symposium on Discrete Algorithms, SODA 2024, Alexandia, Virginia, January 7-10, 2024*, 2024

14. Yair Carmon, Arun Jambulapati, Yujia Jin, and Aaron Sidford. A whole new ball game: A primal accelerated method for matrix games and minimizing the maximum of smooth functions. In *Proceedings of the 2024 ACM-SIAM Symposium on Discrete Algorithms, SODA 2024, Alexandia, Virginia, January 7-10, 2024*, 2024

15. Arun Jambulapati, Jerry Li, Christopher Musco, Kirankumar Shiragur, Aaron Sidford, and Kevin Tian. Structured semidefinite programming for recovering structured preconditioners. In *Advances in Neural Information Processing Systems 36: Annual Conference on Neural Information Processing Systems 2023, NeurIPS 2023, New Orleans, LA, USA, December 10 - 16, 2023*, 2023

16. Arun Jambulapati and Kevin Tian. Revisiting area convexity: Faster box-simplex games and spectrahedral generalizations. In *Advances in Neural Information Processing Systems 36: Annual Conference on Neural Information Processing Systems 2023, NeurIPS 2023, New Orleans, LA, USA, December 10 - 16, 2023*, 2023

17. Yair Carmon, Arun Jambulapati, Yujia Jin, Yin Tat Lee, Daogao Liu, Aaron Sidford, and Kevin Tian. Resqueing parallel and private stochastic convex optimization. In *64th IEEE Annual Symposium on Foundations of Computer Science, FOCS 2023, Santa Cruz, California, USA, November 6-9, 2023*, 2023

18. Arun Jambulapati, Yang P. Liu, and Aaron Sidford. Chaining, group leverage score overestimates, and fast spectral hypergraph sparsification. In *Proceedings of the 55th Annual ACM Symposium on Theory of Computing, STOC 2023, Orlando, FL, USA, June 20-23, 2023*, 2023

19. Yair Carmon, Danielle Hausler, Arun Jambulapati, Yujia Jin, and Aaron Sidford. Optimal and adaptive monteiro-svaiter acceleration. In *Advances in Neural Information Processing Systems 35: Annual Conference on Neural Information Processing Systems 2022, NeurIPS 2022, New Orleans, LA, USA, November 28 - December 9, 2022*, 2022

20. Yair Carmon, Arun Jambulapati, Yujia Jin, and Aaron Sidford. RECAPP: crafting a more efficient catalyst for convex optimization. In *International Conference on Machine Learning, ICML 2022, 17-23 July 2022, Baltimore, Maryland, USA*, 2022

21. Jan van den Brand, Yu Gao, Arun Jambulapati, Yin Tat Lee, Yang P. Liu, Richard Peng, and Aaron Sidford. Faster maxflow via improved dynamic spectral vertex sparsifiers. In *STOC '22: 54th Annual ACM SIGACT Symposium on Theory of Computing, Rome, Italy, June 20 - 24, 2022*, 2022

22. Arun Jambulapati, Yang P. Liu, and Aaron Sidford. Improved iteration complexities for overconstrained p-norm regression. In *STOC '22: 54th Annual ACM SIGACT Symposium on Theory of Computing, Rome, Italy, June 20 - 24, 2022*, 2022

23. Arun Jambulapati, Yujia Jin, Aaron Sidford, and Kevin Tian. Regularized box-simplex games and dynamic decremental bipartite matching. In *49th International Colloquium on Automata, Languages, and Programming, ICALP 2022, July 4-8, 2022, Paris, France*, 2022

24. Sepehr Assadi, Arun Jambulapati, Yujia Jin, Aaron Sidford, and Kevin Tian. Semi-streaming bipartite matching in fewer passes and optimal space. In *Proceedings of the 2022 ACM-SIAM Symposium on Discrete Algorithms, SODA 2022, Virtual Conference / Alexandria, VA, USA, January 9 - 12, 2022*, 2022

25. Arun Jambulapati, Jerry Li, Tselil Schramm, and Kevin Tian. Robust regression revisited: Acceleration and improved estimation rates. In *Advances in Neural Information Processing Systems 34: NeurIPS 2021, December 6-14, 2021, virtual*, 2021

26. Hilal Asi, Yair Carmon, Arun Jambulapati, Yujia Jin, and Aaron Sidford. Stochastic bias-reduced gradient methods. In *Advances in Neural Information Processing Systems 34: NeurIPS 2021, December 6-14, 2021, virtual*, 2021

27. Yair Carmon, Arun Jambulapati, Yujia Jin, and Aaron Sidford. Thinking inside the ball: Near-optimal minimization of the maximal loss. In *Conf erence on Learning Theory, COLT 2021, 15-19 August 2021, Boulder, Colorado, USA*, 2021

28. Arun Jambulapati, Aaron Sidford, and Kevin Tian. A direct $\tilde{O}(1/\epsilon)$ iteration parallel algorithm for optimal transport. In *Advances in Neural Information Processing Systems 32: NeurIPS 2019, December 8-14, 2019, Vancouver, BC, Canada*, 2019

29. Yang P. Liu, Arun Jambulapati, and Aaron Sidford. Parallel reachability in almost linear work and square root depth. In *60th IEEE Annual Symposium on Foundations of Computer Science, FOCS 2019, Baltimore, Maryland, USA, November 9-12, 2019*, 2019

30. AmirMahdi Ahmadinejad, Arun Jambulapati, Amin Saberi, and Aaron Sidford. Perron-frobenius theory in nearly linear time: Positive eigenvectors, m-matrices, graph kernels, and other applications. In *Proceedings of the Thirtieth Annual ACM-SIAM Symposium on Discrete Algorithms, SODA 2019, San Diego, California, USA, January 6-9, 2019*, 2019

31. Arun Jambulapati and Aaron Sidford. Efficient $\widetilde{O}(n/\epsilon)$ spectral sketches for the laplacian and its pseudoinverse. In *Proceedings of the Twenty-Ninth Annual ACM-SIAM Symposium on Discrete Algorithms, SODA 2018, New Orleans, LA, USA, January 7-10, 2018*, 2018

Manuscripts

32. Arun Jambulapati, Hilaf Hasson, Youngsuk Park, and Yuyang Wang. Testing causality for high dimensional data. *CoRR*, abs/2303.07774, 2023

33. Arun Jambulapati, Yin Tat Lee, and Santosh S. Vempala. A slightly improved bound for the KLS constant. *CoRR*, abs/2208.11644, 2022

34. Deeksha Adil, Brian Bullins, Arun Jambulapati, and Sushant Sachdeva. Optimal methods for higher-order smooth monotone variational inequalities. *CoRR*, abs/2205.06167, 2022

35. Arun Jambulapati, Yin Tat Lee, Jerry Li, Swati Padmanabhan, and Kevin Tian. Positive semidefinite programming: Mixed, parallel, and width-independent. *CoRR*, abs/2002.04830, 2020

36. Arun Jambulapati, Kirankumar Shiragur, and Aaron Sidford. Efficient structured matrix recovery and nearly-linear time algorithms for solving inverse symmetric m-matrices. *CoRR*, abs/1812.06295, 2018

Work Experience

Research Intern at Amazon Web Services (AWS) AI, Summer 2021

Intern at Sandia National Laboratories Livermore, Summer 2015

Course Instructor CME 193, Stanford, Spring 2020 – Spring 2022
- Taught classes on fundamentals of the Python toolkit for scientific computing.
- Covered important features of NumPy, SciPy, Pandas, and PyTorch.

Service

Subreviewer for ITCS 2025, STOC 2024, SODA 2024, ITCS 2024, FOCS 2023, ICALP 2023, STOC 2023, NeurIPS 2022, STOC 2022, FOCS 2022, NeurIPS 2021, SODA 2021, NeurIPS 2020

Co-organized reading group on Data Structures in Convex Optimization at the Simons Institute, Fall 2023

Last updated: March 10th, 2025