Prayaag Venkat

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RESEARCH INTERESTS   Theoretical computer science, high-dimensional statistics, probability, differential privacy

EDUCATION

Harvard University   Aug. 2018 - Present

- Ph.D. Computer Science.
- Advisor: Boaz Barak.
- Expected graduation: May 2023

University of Maryland, College Park   Aug. 2014 - Dec. 2017

- B.S. Computer Science, B.S. Mathematics.
- Advisors: Andrew Childs, Samir Khuller, David Mount, Penghui Yao.

PUBLICATIONS

- *Privately Estimating a Gaussian: Efficient, Robust and Optimal.* Daniel Alabi, Pravesh Kothari, Pranay Tankala, Prayaag Venkat, Fred Zhang. In submission. Preprint available at: https://arxiv.org/abs/2212.08018.

- *Near-optimal fitting of ellipsoids to random points.* Aaron Potechin, Paxton Turner, Prayaag Venkat, Alex Wein. In submission. Preprint available at: https://arxiv.org/abs/2208.09493.

- *Efficient algorithms for certifying lower bounds on the discrepancy of random matrices.* Prayaag Venkat. ITCS 2023. Preprint available at: https://arxiv.org/abs/2211.07503.

- *Optimal Regularization Can Mitigate Double Descent.* Preetum Nakkiran, Prayaag Venkat, Sham Kakade, Tengyu Ma. ICLR 2021. Preprint available at: https://arxiv.org/abs/2003.01897.

- *A Fast Spectral Algorithm for Mean Estimation with Sub-Gaussian Rates.* Zhixian Lei, Kyle Luh, Prayaag Venkat, Fred Zhang. COLT 2020. Preprint available at: https://arxiv.org/abs/1908.04468

- *Select and Permute: An Improved Online Framework for Scheduling to Minimize Weighted Completion Time.* Samir Khuller, Jingling Li, Pascal Sturmfels, Kevin Sun, Prayaag Venkat. LATIN 2018.
Preprint available at: https://arxiv.org/abs/1704.06677.

- *A Succinct, Dynamic Data Structure for Proximity Queries on Point Sets.* Prayaag Venkat, David M. Mount. CCCG 2014.

AWARDS

- NSF Graduate Fellowship (2018 - Present)
- Banneker Key Scholarship (2014-2018).
- 2017 Goldwater Scholarship.
- 2016 CRA Undergraduate Research Award, Honorable Mention.

EXPERIENCE

Visiting Graduate Student   Fall 2021

Simons Institute, University of California, Berkeley

- Partcipated in the "Computational Complexity of Statistical Inference" program.

Visiting Graduate Student   Spring 2021

The Statistical and Applied Mathematical Sciences Institute

- Partcipated in the Program on Combinatorial Probability.

Visiting Graduate Student   Fall 2020

Simons Institute, University of California, Berkeley

- Hosted by Professor Prasad Raghavendra.
- Partcipated in the "Probability, Geometry, and Computation in High Dimensions" program.

PRESENTATIONS

- "Near-optimal fitting of ellipsoids to random points," Prayaag Venkat. CMU Theory Lunch. October 2022.
- "A Fast Spectral Algorithm for Mean Estimation with Sub-Gaussian Rates," Prayaag Venkat. COLT 2020. July 2020.
- "A 1D Area Law for Gapped Local Hamiltonians," Boriana Gjura and Prayaag Venkat. Physics and Computation Seminar. Harvard University. November 2018.
- "Mean Estimation in High Dimensions," P. Venkat. Harvard TGINF. October 2018.
- "On Characterizing the Relationship between Lower Bound Methods in Communication Complexity," Jiahui Liu and Prayaag Venkat.
    - Joint Center for Quantum Information and Computer Science (QuICS) Special Seminar. University of Maryland, College Park. August 2017.
    - Joint CAAR REU and Salisbury REU Poster Session. University of Maryland, College Park. July 2017.
- "Online Concurrent Open Shop Scheduling." Prayaag Venkat. Joint CAAR REU and Salisbury REU Poster Session. University of Maryland, College Park. August 2016.
- 'A Succinct, Dynamic Data Structure for Proximity Queries on Point Sets." Prayaag Venkat. Canadian Conference on Computational Geometry (CCCG) 2014. Dalhousie University, Halifax, Nova Scotia, Canada. August 2014.

SERVICE AND TEACHING

Teaching assistant

- CS231 (Quantum Computation and Quantum Complexity), taught by Anurag Anshu in Spring 2022.
- CS121 (Introduction to Theoretical Computer Science), taught by Boaz Barak in Fall 2019

Reviewer for STOC 2020, FOCS 2021, FOCS 2022

Banneker-Key Peer Mentor   2016-Present

University of Maryland, College Park

- Mentored three computer science freshman Banneker-Key Scholarship recipients on selecting courses, pursuing research and internship opportunities, and preparing for future career endeavors.

Computer Science Department Tutor   2016-Present

University of Maryland, College Park

- Tutored undergraduate students in algorithms and discrete math courses.