Tarun Kathuria

CONTACT INFORMATION

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Berkeley,
CA - 94709

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RESEARCH INTERESTS

Algebraic and Spectral Methods in Combinatorics, Geometry of polynomials and Functional analysis, Hardness of Approximation and Counting, Approximation Algorithms, Markov chains and High-Dimensional Probability, Numerical Linear Algebra, Iterative methods for Convex and Non-Convex Optimization and their applications to Machine Learning and Database Theory

WORK EXPERIENCE

Yale University, New Haven, CT — *May 2019 - August 2019*

Summer Intern — *Mentor: Prof. Daniel A. Spielman*

Microsoft Research India, Bangalore — *July 2015 - July 2017*

Research Fellow, Algorithms and Theory Group — *Mentor: Dr. Amit Deshpande*

IBM Research India, Bangalore — *May 2014 - July 2014*

Summer Intern, Business Analytics and Management Group — *Mentor: Dr. Indrajit Bhattacharya*

EDUCATION

University of California, Berkeley — *August 2017 - Ongoing*
PhD — *Advisor: Prof. Prasad Raghavendra*

- Major: Electrical Engineering & Computer Science
- CGPA: 3.8/4.00

Indian Institute of Technology - Bombay — *July 2011 - June 2015*
Bachelor of Technology (Honors)

- Major: Computer Science & Engineering — Minor: Applied Statistics and Informatics
- CGPA: 9.08/10.00

PUBLICATIONS

1. Tarun Kathuria, Yang P. Liu, Aaron Sidford. Unit Capacity Max Flow In Almost $O(m^{4/3})$ time. Merger of two papers appeared in *Proceedings of the 61st Annual IEEE Symposium on Foundations of Computer Science* ***(FOCS 2020)***
2. Haotian Jiang, Tarun Kathuria, Yin Tat Lee, Swati Padmanabhan, Zhao Song. A Faster Interior Point Method for Semidefinite Programming. *Proceedings of the 61st Annual IEEE Symposium on Foundations of Computer Science* ***(FOCS 2020)***
3. Yeshwanth Cherapanamjeri, Samuel B. Hopkins, Tarun Kathuria, Prasad Raghavendra, Nilesh Tripuraneni Algorithms for Heavy-Tailed Statistics: Regression, Covariance Estimation, and Beyond. *Proceedings of the 52nd Annual ACM Symposium on Theory of Computing* ***(STOC 2020)***
4. L. Elisa Celis, Vijay Keswani, Damian Straszak, Amit Deshpande, Tarun Kathuria, Nisheeth K. Vishnoi: Fair and Diverse DPP-Based Data Summarization. *Proceedings of the 35th International Conference of Machine Learning* ***(ICML 2018)***
5. L. Elisa Celis, Amit Deshpande, Tarun Kathuria, Damian Straszak, Nisheeth K. Vishnoi: On the Complexity of Constrained Determinantal Point Processes. *21st International Workshop on Randomization and Computation* ***(RANDOM 2017)***
6. Tarun Kathuria, S. Sudarshan. Efficient and Provable Multi-Query Optimization. *Proceedings of the 36th ACM SIGMOD-SIGACT-SIGART Symposium on Principles of Database Systems* ***(PODS 2017)***
7. Tarun Kathuria, Amit Deshpande, Pushmeet Kohli. Batched Gaussian Process Bandit Optimization via Determinantal Point Processes. *Advances in Neural Information Processing Systems* ***(NIPS 2016)***
8. L. Elisa Celis, Amit Deshpande, Tarun Kathuria, Nisheeth K. Vishnoi. How to be Fair and Diverse? *3rd Workshop on Fairness, Accountability, and Transparency in Machine Learning* ***(FATML 2016)*** (selected for oral presentation)

MANUSCRIPTS

1. Tarun Kathuria. A Matrix Bernstein Inequality via Modified Log Sobolev inequalities. *In Preparation*
2. Tarun Kathuria. Modified Log Sobolev inequalities for high dimensional expanders. *In Preparation*
3. Ankit Garg, Tarun Kathuria, Nikhil Srivastava. Scalar Poincare implies Matrix Poincare. *arXiv:2006.09567*
4. Tarun Kathuria, Satyaki Mukherjee, Nikhil Srivastava. On Concentration Inequalities for Random Matrix Products *arXiv:2003.06319*

Teaching Experience

Graduate Student Instructor, UC Berkeley *Spring 2019, Fall 2019*
Course : Undergraduate Algorithm Design
Assisted the professor in *setting assignments, question papers and model solutions* for examinations, conducting *problem solving* sessions

Undergraduate Teaching Assistant, IIT Bombay *Summer 2013, Spring 2014, Spring 2015*
Course : Introduction to Numerical Analysis
Assisted the professor in *setting question papers and model solutions* for examinations, conducting *problem solving* sessions

Undergraduate Teaching Assistant, IIT Bombay *Autumn 2014*
Course : Linear Algebra
Assisted the professor in *setting question papers and model solutions* for examinations, conducting *problem solving* sessions and invigilating for examinations of the cours

Undergraduate Teaching Assistant, IIT Bombay *Autumn 2012*
Course : Electricity & Magnetism
Assisted the professor in *setting question papers and model solutions* for examinations, conducting *problem solving* sessions

Programming Skills

C++, Java, Python

References provided on request