

Aditya Bhaskara

Department of Computer Science, EPFL
Lausanne, Switzerland
Email. bhaskara@cs.princeton.edu

Research Interests I am interested in algorithms for graph optimization problems (such as finding dense subgraphs, clustering). I am also interested in spectral techniques, and ideas from probability theory and convex geometry useful in understanding algorithmic questions.

Education **Princeton University**, Princeton, NJ (Sep 2007 - Aug 2012)
Ph.D. in Computer Science
Advisor: Prof. Moses Charikar
Thesis: *Finding Dense Substructures in Graphs and Matrices*

Indian Institute of Technology Bombay, India (Jul 2003 - May 2007)
Bachelor of Technology, Computer Science and Engineering
Thesis advisor: Prof. Abhiram Ranade

Employment **Ecole Polytechnique Federale de Lausanne (EPFL)** (Sep 2012 - present)
Post-doctoral Researcher

Research (More details at <http://www.cs.princeton.edu/~bhaskara/>)

Detecting High Log-densities: An $O(n^{1/4})$ -approximation for Densest k -subgraph
(with Moses Charikar, Eden Chlamtac, Uriel Feige and Aravindan Vijayaraghavan)
In Proceedings of ACM Symposium on Theory of Computing (STOC), 2010.

Approximating Matrix p -norms
(with Aravindan Vijayaraghavan)
In Proceedings of SIAM Symposium on Discrete Algorithms (SODA), 2011.

Polynomial Integrality gaps for Strong relaxations of Densest k -subgraph
(with Moses Charikar, Venkat Guruswami, Aravindan Vijayaraghavan, and Yuan Zhou)
In Proceedings of SIAM Symposium on Discrete Algorithms (SODA), 2012.

Unconditional Differentially Private Mechanisms for Linear Queries
(with Daniel Dadush, Ravishankar Krishnaswamy and Kunal Talwar)
In Proceedings of ACM Symposium on Theory of Computing (STOC), 2012.

Minimum Makespan Scheduling with Low-rank Processing Times
(with Ravishankar Krishnaswamy, Kunal Talwar and Udi Wieder)
In Proceedings of SIAM Symposium on Discrete Algorithms (SODA), 2012.

Optimal Hitting Sets for Combinatorial Shapes
(with Devendra Desai and Srikanth Srinivasan)
In Proceedings of APPROX-RANDOM, 2012.

On Quadratic Programming with a Ratio Objective
(with Moses Charikar, Rajsekar Manokaran and Aravindan Vijayaraghavan)
In Proceedings of ICALP, 2012.

Delocalization Properties of Eigenvectors in Random Graphs
(with Sanjeev Arora)
Manuscript, 2012.

Moment based Concentration Bounds for Euclidean Optimization Problems
(with Ravi Kannan)
Manuscript, 2011.

- Awards**
- ◇ Silver Medal, *International Mathematical Olympiad 2002*, Glasgow, UK.
 - ◇ Honorable Mention, *International Mathematical Olympiad 2003*, Tokyo, Japan.
 - ◇ First place, *Regional Finals, ACM Inter-collegiate Programming Contest (ICPC)*, Coimbatore, India 2005.
- Experience**
- Microsoft Research Silicon Valley Center (SVC)** (Summer 2011)
Summer intern in the Theory group, working with Kunal Talwar. Worked on the question of “robust expansion”, which is related to the expansion profile of a graph. Also worked on some questions in differential privacy.
- Microsoft Research India** (Summer 2010)
Summer intern in the Algorithms group, working with Ravi Kannan. Worked on obtaining concentration inequalities for geometric optimization problems (such as TSP on a plane) using moment based techniques.
- Princeton University, Teaching Assistant**
- ◇ COS 487: Theory of Computation (work involved grading, preparing problem sets and exams, and teaching precepts) (Fall 2008)
 - ◇ COS 126: General Computer Science (work involved grading and teaching weekly precepts) (Spring 2009)
- ETH Zürich** (Summer 2006)
Summer intern in the group of Prof. Emo Welzl, working with Tibor Szabó. Worked on linear algebra methods in Combinatorics, in particular on ‘ k -wise’ variants of well-studied set intersection problems, like the oddtown problem and the Ray-Chaudhuri Wilson theorem.
- National University of Singapore** (Summer 2005)
Summer intern with Prof. Antoine Vigneron, working on problems related to approximate near neighbor search, when the objects involved are convex polygons in a plane.
- Other**
- Programming Skills**
Java, C++, Perl, Matlab, Scheme
- References**
Moses Charikar, Department of Computer Science, Princeton University.
Email. moses@cs.princeton.edu
(Others will be provided upon request)