Deeparnab Chakrabarty

Researcher
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Education

Ph.D., Georgia Tech. August 2008.
- *Field:* ACO (Algorithms, Combinatorics and Optimization), Interdisciplinary program in Computer Science, Mathematics, and Industrial Systems and Engineering Departments.
- *Dissertation:* Algorithmic Aspects of Connectivity, Allocation and Design. Advisor: Prof. Vijay V. Vazirani

B.Tech, IIT Bombay. July 2003.
Field: Computer Science and Engineering.

Research Interests

Approximation Algorithms, Combinatorial Optimization
Algorithmic Game Theory and Economics

Employment History

Researcher, Microsoft Research, India, Oct 2011 – present
Post-doctoral Researcher, University of Pennsylvania, Feb 2010 – Jul 2011
Post-doctoral Fellow, University of Waterloo, Sep 2008 – Feb 2010.

Selected Invited Seminars

- International Symposium on Mathematical Programming, Chicago, August 2012.
- Flexible Network Design Workshop. Warsaw, July 2012.
- Bellairs Workshop on Approximation Algorithms. Barbados, April 2010.
- Tutte Seminar. University of Waterloo, November, 2009.
- Discrete Math and Optimization Seminar, McGill University, October 2009.
- International Symposium on Mathematical Programming, Chicago, August 2009.

Professional Service

- Program Committee Member, Eighth Workshop on Ad Auctions, 2012.
- Program Committee Member, SIAM-ACM Symposium on Discrete Algorithms (SODA), 2013.
- Program Committee Member, ACM Conference on Electronic Commerce (EC), 2013.

Teaching Experience

- *Techniques in Approximation Algorithms*, CIS 800, University of Pennsylvania, Fall 2010. Designed and taught PhD level special topics course. 14 students.
- *Scheduling Theory*, CO 454, University of Waterloo, Spring 2009. Taught senior level undergraduate course. 22 students.

Publications

Journal Papers

J9. E. Anshelevich, D. Chakrabarty, A. Hate, C. Swamy. "Approximations for the FireFighter Problem: Computing Cuts over Time." Algorithmica, 62(1-2), 2012.

J8. D. Pritchard and D. Chakrabarty. "Approximability of Sparse Integer Programs." Algorithmica, 61(1), 2011.

J7. D. Chakrabarty, N. R. Devanur, V. V. Vazirani. "New Geometry-Inspired Relaxations and Algorithms for the Metric Steiner Tree Problem". Math. Programming, 130(1), 2011.

J6. D. Chaktabarty, J. Könemann, and D. Pritchard. " Integrality Gap of the Hypergraphic Relaxation of Steiner Trees: a short proof of a 1.55 upper bound." Operations Research Letters, 38(6), 2010.

J5. D. Chakrabarty, N. R. Devanur, V. V. Vazirani. "Rationality and Strongly Polynomial Solvability of Eisenberg-Gale Markets with Two Agents." SIAM Journal of Discrete Math, 24(3), 2010.

J4. D. Chakrabarty, A. Mehta, V. V. Vazirani. "Design is as easy as Optimization.". SIAM Journal of Discrete Math, 24(1), 2010.

J3. D. Chakrabarty, G. Goel. "On the Approximability of Budgeted Allocations and Improved Lower Bounds for Submodular Welfare Maximization and GAP". SIAM Journal of Computing, 39(6), 2010.

J2. B. Benson, D. Chakrabarty, P. Tetali. "G-parking functions, Acyclic Orientations, and Spanning Trees". Discrete Math, 310(8), 2010.

J1. D. Chakrabarty, N. Devanur. "On Competitiveness in Uniform Utility Allocation Markets". Operations Research Letters, 37(3), 2009.

Conference Papers

C21. D. Chakrabarty, C. Seshadhri. "A $o(n)$ monotonicity tester for Boolean functions over the hypercube." Proceedings of the 45th Annual ACM Symposium on Theory of Computing (STOC), 2013.

C20. D. Chakrabarty, C. Seshadhri. "Optimal bounds for monotonicity and Lipschitz testing over hypercubes and hypergrids." Proceedings of the 45th Annual ACM Symposium on Theory of Computing (STOC), 2013.

C19. D. Chakrabarty, Z. Huang. "Testing Coverage Functions." Proceedings of the 39th International Colloquium on Automata, Languages and Programming (ICALP), 2012.

C18. A. Bhalgat, D. Chakrabarty, S. Khanna. "Social Welfare in One-Sided Matching Markets without Money." Proceedings of the 14th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2011

C17. A. Bhalgat, D. Chakrabarty, S. Khanna. "Optimal Lower Bounds for Universal and Differentially Private Steiner Trees and TSP." Proceedings of the 14th International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2011

C16. D. Chakrabarty, C. Chekuri, S. Khanna, and N. Korula. "Approximability of Capacitated Network Design". Proceedings of the XV conference on Integer Programming and Combinatorial Optimization (IPCO), 2011.

C15. D. Chakrabarty, C. Swamy. "Facility Location with Client Latencies: Linear Programming Based Techniques for Minimum Latency Problems." Proceedings of the XV conference on Integer Programming and Combinatorial Optimization (IPCO), 2011.

C14. D. Chakrabarty, E. Grant, J. Könemann. "On Column-restricted and Priority Covering Integer Programs". Proceedings of the XIV conference on Integer Programming and Combinatorial Optimization (IPCO), 2010.

C13. D. Chakrabarty, J. Könemann, D. Pritchard. "Hypergraphic Relaxations for Steiner Trees". Proceedings of the XIV conference on Integer Programming and Combinatorial Optimization (IPCO), 2010.

C12. M. Ammar, D. Chakrabarty, A. Das Sarma, S. Kalyanasundaram, R. J. Lipton. "Algorithms for Message Ferrying on Mobile ad hoc Networks." Proceedings of the IARCS Annual Conference

on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), 2009.

C11. E. Anshelevich, D. Chakrabarty, A. Hate, C. Swamy. "Approximations for the FireFighter Problem: Cuts over Time and Submodularity." Proceedings of the 20th International Symposium on Algorithms and Computation (ISAAC), 2009. Conference version of [J9].

C10. D. Chakrabarty, J. Chuzhoy, S. Khanna. "On Allocating Goods to Maximize Fairness". Proceedings of the 50th IEEE Conference on Foundations of Computer Science (FOCS), 2009.

C9. D. Chakrabarty, Y. Zhou, R. Lukose. "Budget Constrained Bidding in Keyword Auctions and Online Knapsack Problems". Proceedings of the 4th Workshop on Internet and Network Economics (WINE), 2008.

C8. D. Chakrabarty, G. Goel, V. V. Vazirani, L. Wang, C. Yu. "Efficiency, Fairness and Competitiveness in Nash Bargaining Games.". Proceedings of the 4th Workshop on Internet and Network Economics (WINE), 2008.

C7. D. Chakrabarty, G. Goel. "On the Approximability of Budgeted Allocations and Improved Lower Bounds for Submodular Welfare Maximization and GAP". Proceedings of the 49th IEEE Conference on Foundations of Computer Science (FOCS), 2008. Conference version of [J3.].

C6. D. Chakrabarty, N. R. Devanur, V. V. Vazirani. "New Geometry-Inspired Relaxations and Algorithms for the Metric Steiner Tree Problem". Proceedings of the XIII conference on Integer Programming and Combinatorial Optimization (IPCO), 2008. Conference version of [J2].

C5. D. Chakrabarty, N. R. Devanur. "On Competitiveness in Uniform Utility Allocation Markets". Proceedings of 3rd Workshop on Internet and Network Economics (WINE) 2007. Conference version of [J1].

C4. A. Das Sarma, D. Chakrabarty, S. Gollapudi. "Public Advertisement Broker Markets". Proceedings of 3rd Workshop on Internet and Network Economics (WINE) 2007.

C3. D. Chakrabarty, N. R. Devanur, V. V. Vazirani. "New Results on Rationality and Strongly Polynomial Time Solvability in Eisenberg-Gale Markets." Proceedings of 2nd Workshop on Internet and Network Economics (WINE), 2006. Conference version of [J6].

C2. D. Chakrabarty, A. Mehta, V. V. Vazirani. "Design is as easy as Optimization". Proceedings of the 33rd International Colloquium on Automata, Languages and Programming (ICALP), 2006. Conference version of [J5].

C1. D. Chakrabarty, A. Mehta, V. Nagarajan, V. V. Vazirani. "Fairness and Optimality in Congestion Games". Proceedings of 6th ACM Conference on Electronic Commerce (EC), 2005.