

## LORENZO ORECCHIA

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**Research Interests:** Graph Partitioning, Nearly-linear-time Algorithms, Spectral Methods.

### Education

- **University of California, Berkeley**

Currently pursuing a Ph.D. in Computer Science (2005–present)

Advisor: Satish Rao

GPA: 4.0/4.0

**Relevant Courses:** Advanced Algorithms, PCP & Hardness of Approximation, Quantum Computing, Differential Geometry, Randomness & Computation, Monte Carlo Markov Chain Methods, Statistical Learning Theory, Stochastic Processes.

- **Princeton University**

A.B. summa cum laude in Computer Science (2001–05)

GPA: 3.97/4.00

### Publications

- **Spectral Algorithms to Explore Graphs in a Local Manner**  
With Michael W. Mahoney and Nisheeth K. Vishnoi. In submission.
- **Towards an SDP-Based Approach to Spectral Methods: A Nearly-Linear Time Algorithm for Graph Partitioning and Decomposition**  
With Nisheeth K. Vishnoi. *SODA'11: Proc. Symp. on Discrete Algorithms*, 2011. To appear.
- **Implementing Regularization Implicitly Via Approximate Eigenvector Computation**  
With Michael W. Mahoney. arXiv:1010.0703v1 [cs.DS], 2010.
- **Optimal design of oligomer libraries using pseudo-de-Bruijn sets**  
With Samantha J. Riesenfeld and Katherine S. Pollard. In review.
- **Empirical Evaluation of Graph Partitioning Using Spectral Embeddings and Flow**  
With Kevin J. Lang and Michael W. Mahoney. *SEA'09: Proc. Intl. Symp. Experimental Algorithms*, pages 197–208, 2009.
- **On Partitioning Graphs via Single Commodity Flows**  
With Leonard Schulman, Umesh V. Vazirani, and Nisheeth K. Vishnoi. *STOC'08: Proc. Symp. Theory of Computing*, pages 461–470, 2008.
- **On a Cut-Matching Game for the Sparsest Cut Problem**  
With Rohit Khandekar, Subhash A. Khot, and Nisheeth K. Vishnoi. EECS Dept., UC Berkeley, Tech. Rep. UCB/EECS-2007-177, 2007.

- **Localized Techniques for Broadcasting in Wireless Sensor Networks**  
With Devdatt Dubhashi, Olle Häggström, Alessandro Panconesi, Chiara Petrioli, and Andrea Vitaletti. *Algorithmica*, 49-4, pages 412–446, 2007.
- **Localized Techniques for Broadcasting in Wireless Sensor Networks**  
With Alessandro Panconesi, Chiara Petrioli, and Andrea Vitaletti. *DIALM-POMC'04: Joint Workshop on the Foundations of Mobile Computing*, pages 41–51, 2004.

### Other Research Experience

- **Intern:** *Microsoft Research Labs*, Bangalore, India. Fall 2009. Mentor: Nisheeth K. Vishnoi. Topic: Nearly-linear time algorithms for balanced graph-partitioning.
- **Intern:** *Stanford University*, Palo Alto, CA. Summer 2009. Mentor: Michael Mahoney. Topic: Development of spectral graph-partitioning algorithms and application to the analysis of social networks.
- **Intern:** *Yahoo! Research*, Santa Clara, CA. Summer 2008. Mentors: Kevin Lang and Michael Mahoney. Topic: Implementation and empirical evaluation of the graph-partitioning algorithm published at STOC 2008.
- **Intern:** *Dipartimento di Informatica, Università La Sapienza*, Rome, Italy. Summer 2004. Mentor: Alessandro Panconesi. Topic: Wireless sensor networks.

### Teaching Experience

- **Teaching Collaborator:** CS294, UC Berkeley. Spring 2010. Taught by Satish Rao and Umesh Vazirani. Gave a series of five original lectures on sparsification and semidefinite-programming-based algorithms for a graduate seminar on recent developments in the theory of algorithms.
- **Teaching Assistant:** CS70 - Discrete Mathematics & Probability Theory, UC Berkeley. Fall 2006. Taught by Christos Papadimitriou and Umesh Vazirani.
- **Teaching Assistant:** CS170 - Algorithms & Intractable Problems, UC Berkeley. Fall 2006. Taught by Christos Papadimitriou and Umesh Vazirani.

### Other Activities

- **Theory Seminar Organizer:** *UC Berkeley*, Berkeley, CA. Fall 2010. Co-organizer: Umesh Vazirani. Selected and invited speakers, often from outside UC Berkeley, to present significant recent results in Theoretical Computer Science at a weekly seminar.

### Awards

- Outstanding Graduate Student Instructor, UC Berkeley, Fall 2006
- Princeton University Shapiro's Prize for Academic Excellence (2001–02) and (2002–03)