

# Reid Andersen

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**Research Interests** Graph partitioning and community identification, local algorithms and distributed algorithms, modeling and analysis of large networks.

## Education

- **University of California, San Diego**  
Ph.D. in Mathematics expected June 2007  
Advisor: Prof. Fan Chung Graham  
GPA: 3.96/4.0  
  
M.A. in Mathematics 2001-2002
- **Massachusetts Institute of Technology**  
B.Sc. in Mathematics 1997-2001  
GPA: 4.75/5.0

## Research Experience

- **Research Intern**, Yahoo! Research, Mission College (Summer 2006)  
Worked with Kevin Lang to develop an algorithm for identifying submarkets in sponsored search spending graphs, which appears in the paper *Finding rich isolated submarkets in a sponsored search spending graph*. Implemented a local partitioning algorithm for clustering bipartite graphs. Extended local partitioning results to directed graphs, to appear in the paper *Local partitioning in directed graphs*.
- **Research Intern**, Yahoo! Research, Pasadena (Summer 2005)  
Worked with Kevin Lang on problems in graph partitioning and community identification. Developed an algorithm for expanding a set of seed nodes into a larger community while examining only a small portion of the input graph. This research appears in the paper *Communities from seed sets*.
- **Research Assistant**, with Prof. Fan Chung Graham, UCSD (2003-Present),  
Research in modeling large networks, spectral algorithms, graph partitioning, routing, and graph visualization.

- **Research Assistant**, MIT (Summer 2000), with Prof. Dan Spielman. Research in embeddings of planar graphs, sphere-preserving maps, and graph partitioning.
- **Research Assistant**, MIT (Summer 1998), with Prof. Dan Kleitman.

## Teaching

- Teaching Assistant, UCSD (2001-2005)  
Courses taught include linear algebra, discrete math, statistics, applied graph theory, and calculus.

## Conference Publications and Preprints

- *Local graph partitioning using personalized PageRank vectors*, with F. Chung and K. Lang, FOCS 2006.
- *Communities from seed sets*, with K. Lang, WWW 2006.
- *Analyzing the small world phenomenon using a hybrid model with local network flow*, with F. Chung and L. Lu, Third workshop on algorithms and models for the web-graph, WAW 2004.
- *Drawing power law graphs*, with F. Chung and L. Lu, Graph Drawing 2004.
- *On disjoint path pairs with wavelength continuity constraint in WDM networks*, with F. Chung, A. Sen, and G. Xue, IEEE INFOCOM 2004.
- *Finding rich isolated submarkets in a sponsored search spending graph*, with K. Lang, Submitted, 2007.
- *Local partitioning in directed graphs*, with F. Chung, and K. Lang, Preprint, 2007.
- *A local algorithm for finding dense subgraphs*, Preprint, 2007.
- *Finding large and small dense subgraphs*, Preprint, 2007.

Publications and preprints are available from <http://math.ucsd.edu/~randerse/>

## Journal Publications

- *Modeling the small-world phenomenon with local network flow*, with F. Chung and L. Lu, Internet Mathematics **2** (3), pp. 359–385, 2006.
- *Drawing Power Law Graphs using a Local/Global Decomposition*, with F. Chung and L. Lu, To appear in Algorithmica.

## Patents Pending

- K. Lang and R. Andersen, A method for identifying web communities, U.S. patent filed, 2006.

## Conference Presentations and Invited Talks

- DIMACS - Georgia Tech Workshop on Complex Networks and their Applications, 2007.
- FOCS 2006.
- WWW 2006.
- Yahoo! Research Lab in Pasadena, 2005.
- Graph Drawing 2004.
- Workshop on algorithms and models for the web-graph (WAW), 2004.

## Professional activities

- Reviewed papers for Internet Mathematics, Mathematics in Computer Science, ESA 2005, ACM Transactions on the Web.

## Programming

- Proficient in Python, C, Matlab.

## References

- Prof. Fan Chung Graham (thesis advisor)  
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affiliation: Department of Mathematics, University of California, San Diego
- Prof. Daniel A. Spielman  
email: spielman@cs.yale.edu  
affiliation: Department of Computer Science, Yale University
- Prof. Russell Impagliazzo  
email: russell@cs.ucsd.edu  
affiliation: Department of Computer Science, University of California, San Diego
- Dr. Kevin Lang  
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