

# Qixiang Sun

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**INTERESTS** Distributed systems and information management

**EDUCATION** **Ph.D. in Computer Science**, Stanford University, expected June 2005  
Dissertation: *Improving the Performance of Peer-to-Peer Systems*  
Advisor: Professor Hector Garcia-Molina

**M. Eng. in Computer Science**, M.I.T., 2000  
Thesis: *Reliable Multicast for Publish/Subscribe Systems*  
Advisor: Professor Nancy Lynch

**B.S. in Computer Science** and **B.S. in Mathematics**, M.I.T., 2000

## RESEARCH

**Stanford University** Stanford, CA  
Research Assistant, September 2000 — present

- Proposed a hybrid approach in building peer-to-peer (P2P) search networks. I combined the strength of both structured and unstructured P2P networks.
- Analyzed the dynamics of query propagation in unstructured P2P networks. I developed algorithms for finding the optimal query injection rates into the network such that the most amount of queries are processed in the network.
- Studied how to map *any* P2P overlay network to the underlying physical network, in a distributed manner, so that the overlay connections have low latency. I examined how well we can map some popular overlay networks and how to take advantage of our mapped network in routing.
- Designed a simple incentive protocol for unstructured P2P file-sharing networks that encourages users to behave “properly.” The protocol operates without any global knowledge or global infrastructure.
- Designed a protocol for an ad-hoc inter-vehicle network that disseminates alerts, e.g., road and traffic conditions, to cars in a specific region for a duration of time. The protocol guarantees to notify all “reachable” cars.
- Developed an algorithm for finding optimal Nash equilibrium and analyzed best-response dynamics for a tractable class of congestion games.

**Microsoft Research** Redmond, WA  
Intern, Summer of 2001

- Illustrated that by simply looking at the traffic patterns of encrypted Web-browsing, one can identify which web page a user is browsing.

**M.I.T. Graphics Group** Cambridge, MA  
Research Assistant, Spring of 2000

- Improved the accuracy of the vision engine for performing spherical mosaic in the City Scanning Project.

**IBM T. J. Watson Research Center** Hawthorne, NY  
Intern and Co-op, Summers of 1997, 1998, 1999 and Fall of 1999

- Combined gossip with log-based reliable multicast for data distribution in publish/subscribe environment.
- Worked on optimization algorithms for cluster management software.

## PUBLICATIONS

Copies of publication are available from <http://www-db.stanford.edu/~qsun/>

### Papers in Journals (1) and Conferences (7)

1. S. Jeong, R. McGrew, E. Nudelman, Q. Sun, and Y. Shoham. *Fast and Compact: On a Simple Class of Congestion Games*. To appear in the 20th National Conference on Artificial Intelligence (AAAI), 2005.
2. Q. Sun, N. Daswani, and H. Garcia-Molina. *Maximizing Remote Work in Flooding-based Peer-to-Peer Systems*. Extended version of (4), to appear in Computer Network (COMNET).
3. Q. Sun and H. Garcia-Molina. *SLIC: A Selfish Link-based Incentive Mechanism for Unstructured Peer-to-Peer Networks*. In Proceedings of the 2004 International Conference on Distributed Computing Systems (ICDCS), Tokyo, Japan, March, 2004.
4. Q. Sun, N. Daswani, and H. Garcia-Molina. *Maximizing Remote Work in Flooding-based Peer-to-Peer Systems*. In Proceedings of the 17th International Symposium on Distributed Computing (DISC), Sorrento, Italy, October, 2003.
5. P. Ganesan, Q. Sun, and H. Garcia-Molina. *YAPPERS: A Peer-to-Peer Lookup Service Over Arbitrary Topology*. In Proceedings of the 22nd Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM), San Francisco, CA, March, 2003.
6. Q. Sun and H. Garcia-Molina. *Partial Lookup Services*. In Proceedings of the 23rd International Conference on Distributed Computing Systems (ICDCS), Providence, RI, May, 2003.
7. Q. Sun, D. Simon, Y.-M. Wang, W. Russell, V. Padmanabhan, and L. Qiu. *Statistical Identification of Encrypted Web Browsing Traffic*. In Proceedings of the 2002 IEEE Symposium on Security and Privacy (S&P), Oakland, CA, May, 2002.
8. Q. Sun and D. Sturman. *A Gossip-Based Reliable Multicast for Large-Scale High-Throughput Applications*. In Proceedings of the 2000 International Conference on Dependable Systems and Networks (DSN), New York, NY, June, 2000.

### Papers submitted for publication (1)

9. P. Ganesan, Q. Sun, and H. Garcia-Molina. *Apocrypha: Making P2P Overlays Network-aware*. Submitted to the IEEE/ACM Transactions on Networking (TON).

### Technical Reports (2)

10. P. Ganesan, Q. Sun, and H. Garcia-Molina. *Adlib: A Self-Tuning Index for Dynamic Peer-to-Peer Systems*. Stanford University Technical Report, 2004. Poster version appeared in the 21st International Conference on Data Engineering (ICDE), 2005.
11. Q. Sun and H. Garcia-Molina. *Using Ad-hoc Inter-Vehicle Network for Regional Alerts*. Stanford University Technical Report, 2005.

## PATENTS

*Gossip-based Reliable Multicast Message Recovery System and Methods*. US Patent pending (application #09/602230). Filed by IBM.

## AWARDS

National Science Foundation Graduate Fellowship, Fall 2000 — Summer 2003

## CITIZENSHIP

USA

## REFERENCES

Available upon request