

Mukund Sundararajan

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RESEARCH INTERESTS Theoretical computer science, economics; applications to security, data-privacy, advertising markets.

EDUCATION **Stanford University**, Stanford, CA, USA.
Ph.D. Candidate, Computer Science, (2005–)
 • Advisers: Tim Roughgarden and John C. Mitchell
 • Thesis topic: Trade-Offs in Cost-Sharing
Master's in Computer Science, (2003-2005)
Vishwakarma Institute of Technology, Pune, India.
Bachelor of Engineering (1998-2002)

WORK EXPERIENCE • With Tim Roughgarden's group at Stanford, studied tradeoffs in mechanism design. Specifically, resource allocation mechanisms and advertising auctions (see publications [1]-[9]).
 • At John Mitchell's group at Stanford, investigated protocol security using formal logic. Specifically, the wireless LAN protocol IEEE 802.11i (see publication [10,11]) and reviewed a draft of IEEE 802.16e.
 • As a summer intern at Microsoft with Jason Hartline, helped design and analyze reserve pricing schemes for keyword auctions. In a separate project, we designed selling strategies over social networks (see publication [12]).
 • As a summer intern at Yahoo with David Pennock, studied keyword bundling strategies and privacy mechanisms (see publications [13,14]).
 • As a summer intern at Adbrite Technologies, investigated the use of demographic data to improve the relevance of internet ads.
 • At Serafim Batzoglou's group at Stanford, built a system that used sparse dynamic programming techniques to align genome sequences. (see publication [15]).
 • As a software developer at Codito Technologies, was part of a team that built a kernel for a heterogeneous multiprocessor system that runs multimedia codecs.

PUBLICATIONS 1. Tim Roughgarden, Mukund Sundararajan: New trade-offs in cost-sharing mechanisms. STOC 2006. Full version to appear in JACM.
 2. Shuchi Chawla, Tim Roughgarden, Mukund Sundararajan: Optimal Cost-sharing Mechanisms for Steiner Forest Problems: WINE 2006.
 3. Tim Roughgarden, Mukund Sundararajan: Optimal Efficiency Guarantees for Network Design. Integer Programming and Combinatorial Optimization (IPCO) 2007.
 4. Aranyak Mehta, Tim Roughgarden, Mukund Sundararajan: Beyond Moulin Mechanisms. EC 07. Invited to special issue of Games and Economic Behavior.

5. Shahar Dobzinski, Tim Roughgarden, Mukund Sundararajan: Is Shapley Optimal? SAGT 08.
6. Jason Auerbach, Joel Galenson, Mukund Sundararajan: An Empirical Analysis of Return on Investment Maximization in Sponsored Search Auctions. AKDD 2008.
7. Tim Roughgarden, Mukund Sundararajan: Is Efficiency Expensive? 3rd Workshop on Sponsored Search, 2007.
8. Samuel Ieong, Anthony Man Cho So, Mukund Sundararajan: Stochastic Mechanism Design. WINE 07. A short announcement appeared in SIGECOM Exchanges, special issue on combinatorial auctions.
9. Shahar Dobzinski, Mukund Sundararajan: On Characterizations of Truthful Mechanisms for Combinatorial Auctions and Machine Scheduling. EC 2008.
10. Changhua He, Mukund Sundararajan, Anupam Datta, Ante Derek, John C. Mitchell: A modular correctness proof of IEEE 802.11i and TLS. ACM Conference on Computer and Communications Security 2005. Invited to special issue of ACM TISSEC.
11. John Mitchell, Arnab Roy, Mukund Sundararajan: An Automated Approach to Proving PCL Invariants. SECRET 2008, to appear in ENTCS.
12. Jason Hartline, Vahab Mirrokni, Mukund Sundararajan: Marketing Strategies over Social Networks. WWW 2008.
13. Arpita Ghosh, Hamid Nazerzadeh, Mukund Sundararajan: Computing Optimal Bundles for Sponsored Search. WINE 07.
14. Arpita Ghosh, Tim Roughgarden, Mukund Sundararajan: Universally Utility-Maximizing Privacy Mechanisms. Technical Report arXiv:0811.2841.
15. Mukund Sundararajan, Michael Brudno, Kerrin Small, Arend Sidow, Serafim Batzoglou: Chaining Algorithms for Alignment of Draft Sequence. WABI 2004.

PROGRAMMING
SKILLS

C, R/S-Plus and Matlab.

INVITED TALKS

- “Trade-Offs in Cost-Sharing”—at Microsoft Research and University of Washington and Dagstuhl Seminar on Computational Social Systems and the Internet
- “Steiner Tree Mechanisms and Prize-Collection” at Informs 2006
- “Keyword Auctions: Is Efficiency Expensive?” at Informs 2007
- “Optimal Marketing Strategies over Social Networks” at Microsoft Research
- “Does Efficiency Pay?” at Yahoo Research, New York.

MISCELLANEOUS

- Funded by the Stanford Graduate Fellowship and the Stanford School of Engineering Fellowship
- On the program committee of EC 2009

References

Available on request.