Alex Fabrikant

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Education

University of California, Berkeley
Ph.D., Computer Science, 2008
Dissertation title: *Complexity of game dynamics*
Advisor: Christos H. Papadimitriou
Graduate minor in systems, security, and networking
Graduate minor in statistics

University of California, Berkeley
B.S., Electrical Engineering and Computer Science, *Summa cum laude*, 2002
B.A., Mathematics, *Summa cum laude*, 2002
B.A., Linguistics, 2002

Research interests

Theoretical questions (in algorithmic game theory and mechanism design, distributed algorithms, complexity) firmly grounded in applications (with particular interests in networking, distributed systems, and network security).

Publications (Refereed)

Total citation count: 735 (Jan 2010, per Google Scholar)

- Minlan Yu, **Alex Fabrikant**, and Jennifer Rexford, "BUFFALO: Bloom filter forwarding architecture for large organizations." In the Proceedings the Conference on Emerging networking experiments and technologies (CoNEXT) 2009, pages 313–324. (Acceptance rate: 17.1%)
- **Alex Fabrikant** and Christos Papadimitriou, "The complexity of game dynamics: BGP oscillations, sink equlibria, and beyond." In the Proceedings of the Symposium on Discrete Algorithms (SODA) 2008, pages 844–853. (Acceptance rate: 29.7%)
- Constantinos Daskalakis, **Alex Fabrikant**, and Christos Papadimitriou, "The Game World is Flat: The Complexity of Nash Equilibria in Succinct Games." In the Proceedings of the International Conference on Automata, Languages, and Programming (ICALP) 2006, pages 513–524. (Acceptance rate: 26.8%)
- **Alex Fabrikant**, Christos Papadimitriou, Kunal Talwar, "The Complexity of Pure Nash Equilibria." In the Proceedings of Symposium on the Theory Of Computing (STOC) 2004, pages 604–612. (Acceptance rate: 25.9%)
- **Alex Fabrikant**, Ankur Luthra, Elitza Maneva, Christos H. Papadimitriou, and Scott Shenker, "On a Network Creation Game." In the Proceedings of the Symposium on the Principles of Distributed Computing (PODC) 2003, pages 347–351. (Acceptance rate: 16.3%)
- **Alex Fabrikant**, Elias Koutsoupias, and Christos H. Papadimitriou, "Heuristically Optimized Trade-offs: A New Paradigm for Power Laws in the Internet." In the Proceedings of the International Conference on Automata, Languages, and Programming (ICALP) 2002, pages 110–122. (Acceptance rate: 30.9%)
- **Alex Fabrikant**, Tad Hogg, "Graph Coloring with Quantum Heuristics." In the Proceedings of the American Association for Artificial Intelligence Conference (AAAI) 2002, pages 22–27. (Acceptance rate: 25.8%)

Publications in progress

- **Alex Fabrikant**, Aaron Jaggard, and Michael Schapira, "On the Structure of Weakly Acyclic Games", in submission to EC 2010

- Martin Suchara, **Alex Fabrikant**, and Jennifer Rexford, "Breaking BGP in Passing: The Devil is in the Dynamics", in preparation for submission.
- **Alex Fabrikant**, Umar Syed, and Jennifer Rexford, "There's something about MRAI: Timing diversity can exponentially worsen BGP convergence", in preparation for submission.
- **Alex Fabrikant** and Christos Papadimitriou, "Best reply with profit aforethought: lookahead in games and lasso equilibria", in preparation for submission to SAGT 2010

Publications (Non-Refereed)

- Lior S. Pachter, Jody Schwartz, Jim Lord, **Alexander Fabrikant**, Alexander Poliakov, Kelly A. Frazer, Inna Dubchak. "AVID and VISTA: Comparative Genomics Tools for Biological Discovery." Poster at the International Conference on Computational Molecular Biology (RECOMB) 2001.
- Lior Pachter, Nick Bray, Inna Dubchak, **Alex Fabrikant**, Jim Lord, Eddy Rubin, Jody Schwartz. "AVID: Aligner for VISTA Including Draft." Poster at Genome Sequencing and Biology Workshop, Cold Spring Harbor, 2001.

Invited talks

- "The Complexity of Game Dynamics: Sink Equilibria, BGP Oscillations, and Beyond", Dagstuhl Seminar on Equilibrium Computation, Nov 2007, Dagstuhl, Germany
- "The Complexity of Game Dynamics: Sink Equilibria, BGP Oscillations, and Beyond", The Institute For Operations Research and The Management Sciences (INFORMS) Annual Meeting, 2007, Seattle, WA
- "The Complexity of Game Dynamics: Sink Equilibria, BGP Oscillations, and Beyond", Theory Seminar, Microsoft Research, Nov 2007, Redmond, WA
- "Selfish Behavior in Networks," Frontiers in Distributed Information Systems Workshop (FDIS) 2005, San Francisco, CA

Research positions

Princeton University, CS Dept.: Postdoctoral research associate, joint appointment with Prof. Jennifer Rexford's networking group and the CS Theory group.	2008–now
UC Berkeley, CS Div.: Hertz Foundation fellow, graduate student researcher. Advisor: Christos H. Papadimitriou	2002–2008
HP Labs, Systems Research Center: Research intern	Summer 2003
Xerox PARC, Information Science & Technology Lab: Research intern	Summer 2000
Lawrence Berkeley National Lab, Genome Sciences Div.: Research assistant	2000–2001

Engineering positions

Schlumberger ATE, Compilers and Patterns Group: Intern	Summer 1999

Awards and Funding

- Princeton University postdoctoral fellowship, 2008–2010
- John and Fannie Hertz Foundation Fellow, 2002–2007 ($\sim$ 15/year awarded across science and engineering in the US)
- NSF Graduate Research Fellowship, 2002 (declined)
- DOD National Defense Science and Engineering Graduate Fellowship, 2002 (declined)
- Computing Research Association Outstanding Undergraduate Award 2002, Runner-Up (2nd place in the US)
- Google Scholarship 2002, 3rd place
- UC Berkeley EECS Department Citation (top in graduating class), 2002
- UC Berkeley Programming Contest 2002, 1st place

◇ UC Berkeley Programming Contest 2000, 2nd place

◇ ACM Programming Contest, Pacific Northwest Region, 1998 and 2002, 4th place

Teaching experience

Princeton University, CS Department:

· Spring 2009: Designed and co-taught a pilot month-long graduate mini-course on Algorithmic Game Theory

Rutgers University, CS Department:

· Spring 2009: Gave a guest lecture on complexity and game theory in an advanced-topics graduate course on algorithmic game theory

Prison University Project, San Quentin State Prison
(`http://prisonuniversityproject.org/`)

· Summer 2007: Lecturer, Chemistry (pilot course)

· Spring 2007: Lecturer, Geometry

· Spring 2005, Summer 2005: Teaching Assistant, Pre-Calculus & Calculus

· Summer 2004–Fall 2004; Fall 2005–Fall 2006: Teaching Assistant, Developmental Math

UC Berkeley, CS Department:

· Spring 2007: Teaching Assistant, Discrete Math for CS

  – Guest lecturer for 3 lectures

  – 2nd highest TA rating in the 7 years the course was taught

· Spring 2004: Teaching Assistant, Introduction to CS Theory

· Spring 2001: Teaching Assistant, Complexity Theory

· Spring 2000: Reader, Discrete Math for CS

Fall 2000–Fall 2002: CS Tutor for UC Berkeley HKN, an EECS service group (volunteer)

Spring 1999–Spring 2000: Math Tutor, Clark Kerr Campus, UC Berkeley

Mentoring experience

Princeton, 2009–current: Informally co-advise, with Jen Rexford, 2 Ph.D. students, Martin Suchara and Minlan Yu, on projects at the interface between theoretical CS and networking

UC Berkeley, Summer 2008: Served as one of 4 graduate mentors for the TRUST-SUPERB project, supervising 10 undergraduates from underrepresented backgrounds working on a group summer research project in software security

Service

◇ Reviewer for STOC 2005, SODA 2005, CCC 2005, ICALP 2005, SODA 2006, STOC 2006, SODA 2007, STOC 2007, FOCS 2007, SODA 2008, STOC 2008, ICALP 2008, ESA 2008, STOC 2009; referee for ACM Transactions on Algorithms, SIAM Journal on Computing

◇ Graduate representative, Berkeley CS Dept. Faculty Hiring Committee, 2006-2007

◇ Organizer, Berkeley Theory Graduate Informal Forum, Fall 2003–Fall 2004

◇ Mailing list manager, Berkeley CS Theory Group, 2004–current

◇ Organizer & presenter, CS GRE Theory workshop, UC Berkeley, Fall 2002

Technical Skills

Languages: C/C++, perl, Java, Python, lex/yacc, Common Lisp, Scheme, Pascal, MIPS assembly, Postscript, Visual Basic

Math: Matlab, Octave, Mathematica; TeX/LaTeX

Miscellanea: CVS, ClearCase; PHP, SQL, CGI, HTML

Environments: Linux (inc. system administration), FreeBSD, Solaris, HP-UX, Windows

Professional memberships

ACM SIGACT, Eta Kappa Nu, Tau Beta Pi

Languages	English (fully fluent), Russian (fully fluent), Spanish (conversational)
Citizenship	US
References	Available on request.