

Evdokia V. Nikolova

CONTACT INFORMATION	MIT Computer Science and Artificial Intelligence Laboratory Room 32-G596 32 Vassar Street Cambridge, MA 02139, USA	Tel: (617) 253-6182 E-mail: enikolova@csail.mit.edu Web: http://people.csail.mit.edu/~enikolova
RESEARCH INTERESTS	Algorithms & Combinatorial optimization; Stochastic and Nonconvex optimization; Computational Economics and Game Theory.	
EDUCATION	Massachusetts Institute of Technology , Cambridge, Massachusetts. Ph.D. Candidate in Electrical Engineering and Computer Science Advisor: Prof. David Karger (GPA 5.0/5.0) Cambridge University , Cambridge, United Kingdom. Master in Mathematics (C.A.S.M. with Distinction), June 2003 Advisor: Prof. Frank Kelly. Thesis: <i>Duality of the Gradient Method and Lyapunov Functions in the context of Internet Congestion Control.</i> Harvard University , Cambridge, Massachusetts. <ul style="list-style-type: none">• M.S. in Computer Science, June 2002.• B.A. in Applied Mathematics with Economics, June 2002	
SELECTED HONORS AND AWARDS	<ul style="list-style-type: none">◇ Doctoral Fellowship in the Mathematical Sciences, American Foundation for Bulgaria (2006-2007)◇ Presidential Fellowship, MIT (2003-2004)◇ Herchel Smith Harvard Fellowship, Cambridge University, England. (2002-2003)◇ John Harvard and Elizabeth Cary Agassiz Scholarship, Harvard University (1998-2002)◇ Flora Burt Fellowship, Harvard University (for travel in Argentina) (Aug-Sep. 2001)◇ Detur Book Prize, Harvard University (1999)◇ Third place, Euclid Mathematical Contest, British Columbia, Canada. (1997)◇ Fifth place nationwide, Bulgarian National Mathematics Olympiad. (1996)◇ First place, Journal "Matematika" national tournament, Bulgaria. (1991)	
WORK EXPERIENCE	Google Research <i>Research Intern</i> Analyzed sponsored search auctions.	New York, NY Summer 2007
	Yahoo! Research <i>Research Intern</i> Analyzed prediction markets.	New York, NY Summer 2006
	Mitsubishi Electric Research Labs <i>Research Intern</i> Developed models and algorithms for optimal routing in stochastic networks.	Cambridge, MA Summer 2004, 2005
	Roadmap Technologies <i>Software Developer</i> Designed and implemented a successful algorithm for Roadmap's planning and forecasting software; product appeared as Roadmap Heatwave.	Beverly, MA Summer 2001

National Bureau of Economics Research Cambridge, MA
Research Assistant 1999-2001
Researched optimal consumer behavior.

Harvard Institute of Intl. Development, USAID Sofia, Bulgaria
Consultant/ Research Assistant Summer 2000
Designed methods to estimate the size of the Bulgarian Shadow Economy.

TEACHING &
MENTORING

Massachusetts Institute of Technology Cambridge, MA
Guest Lecturer on potential games, course "Game Theory and Mechanism Design". (Spring 2006)

Massachusetts Institute of Technology Cambridge, MA
Teaching Assistant for "Game Theory and Mechanism Design". (Spring 2005)

Research Science Institute (RSI) Cambridge, MA
[in collaboration with MIT to promote research among talented high school students worldwide]

Research Mentor to:

- ◇ Yifei Chen for his paper "Overpayment in Strategyproof Payment Schemes." (Summer 2004)
- ◇ Fatima-Ezzahra Izma for her paper "Independent Sets in Special Types of Graphs." (Summer 2005)

Harvard University Cambridge, MA

- ◇ *Teaching Fellow* for CS 124, "Introduction to Data Structures and Algorithms." (Spring 2002).
- ◇ *Teaching Assistant* for Math E-9, "Functions and Graphs." (Spring 2001, Fall 2002).
- ◇ *Tutor* for Calculus, Linear Algebra, Economics, Probability Theory and Statistics (1999-2002).

PUBLICATIONS

- J. Feldman, S. Muthukrishnan, E. Nikolova, M. Pal. A Truthful Mechanism for Offline Ad Slot Scheduling. To appear in the *First International Symposium on Algorithmic Game Theory (SAGT)*, 2008.
- J. Kelner and E. Nikolova. On the Hardness and Smoothed Complexity of Quasi-concave Minimization. In *Proceedings of 48th Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, 2007.
- A. Hall, E. Nikolova, and C. Papadimitriou. Incentive-Compatible Interdomain Routing with Linear Utilities. In *Proceedings of the 3rd International Workshop On Internet And Network Economics (WINE)*, 2007.
- Y. Chen, L. Fortnow, E. Nikolova and D. Pennock. Betting on Permutations. In *Proceedings of the Eighth ACM Conference on Electronic Commerce (ACM EC)*, 2007.
- E. Nikolova and R. Sami. A Strategic Model for Information Markets. In *Proceedings of the Eighth ACM Conference on Electronic Commerce (ACM EC)*, 2007.
- E. Nikolova, M. Brand, and D. Karger. Optimal Route Planning under Uncertainty. In *Proceedings of 2006 International Conference on Automated Planning & Scheduling (ICAPS)*, 2006.
- E. Nikolova, J. Kelner, M. Brand, M. Mitzenmacher. Stochastic Shortest Paths via Quasi-convex Maximization. In *Proceedings of 2006 European Symposium of Algorithms (ESA)*, 2006.
- N. Immorlica, D. Karger, E. Nikolova, and R. Sami. First-Price Path Auctions. In *Proceedings of ACM Conference on Electronic Commerce (ACM EC)*: 203-212, 2005.
- D. Karger and E. Nikolova. On the Expected Overpayment of VCG Mechanisms in Large Networks. Invited paper in *Conference on Decision and Control (CDC)*, 2006. Brief Announcement in *PODC 2005*: 126. Accepted presentation to *DIMACS Workshop on Computational Issues in Auction Design*, October 2004.

- Y. Chen, L. Fortnow, E. Nikolova, and D. Pennock. Combinatorial betting. *SIGecom Exchanges*, 2008. Survey. To appear. (Invited)
- PAPERS IN PREPARATION
- D. Karger and E. Nikolova. Route Planning under Uncertainty: the Canadian Traveller Problem.
- SELECTED TALKS
- From Shortest paths to Quasi-concave Minimization.
- **Stanford University** Algorithms Seminar, Stanford, CA. December 2007. (Invited)
 - **IBM Almaden**, San Jose, CA. December 2007.
 - **University of Wisconsin-Madison** Theory Colloquium, Madison, WI. November 2007. (Invited)
 - **Dartmouth University** CS Theory Colloquium, Hanover, NH. October 2007. (Invited)
 - **Rensselaer Polytechnic Institute** CS Theory Colloquium, Troy, NY. October 2007. (Invited)
- Design & Optimization in Prediction Markets.
- **Dartmouth University** Computer Science Colloquium, Hanover, NH. October 2007. (Invited)
 - **Microsoft Research**, Mountain View, CA. December 2007.
 - **Microsoft Research**, Redmond, WA. November 2007.
- First-Price Path Auctions
- **INFORMS**, Denver, CO. 2005. (Invited)
 - **ACM Electronic Commerce**, Vancouver, BC. June 2005.
- On the Expected Overpayment of VCG Mechanisms in Large Networks
- **45th IEEE Conference on Decision and Control**, San Diego, CA. December, 2006. (Invited)
 - **DIMACS Workshop on Computational Issues in Auction Design**, Rutgers University, NJ. October 2004.
 - **ACM Symposium on Principles of Distributed Computing**, Las Vegas, Nevada. July, 2005.
- Stochastic Shortest Paths via Quasi-convex Maximization
- **University of California, San Diego**. Seminar on Theory and Algorithms Research, December 2006. (Invited)
 - **MIT Algorithms and Complexity Seminar**, Cambridge, MA. December 2006.
 - **European Symposium of Algorithms**, Zurich, Switzerland. September 2006.
- Optimal Route Planning under Uncertainty
- **International Conference on Automated Planning & Scheduling**, The English Lake District, Cumbria, UK. June, 2006.
 - **Workshop for Women in Machine Learning**, San Diego, CA. October 2006. (poster)
- PROFESSIONAL SERVICE
- ◇ Reviewing for: ACM Symposium on Theory of Computing (STOC), ACM-SIAM Symposium on Discrete Algorithms (SODA), ACM Conference on Electronic Commerce (EC), ACM Symposium on Parallel Algorithms and Architectures (SPAA), MIT Oxygen Student Conference, Transportation Science, IEEE Transactions on Automatic Control, Operations Research Letters, Mathematics of Operations Research, Algorithmica, Theoretical Computer Science.
 - ◇ MIT CSAIL Student Committee—allocated \$20,000 annual fund for graduate student activities. (2005/06)
 - ◇ Organized Game Theory seminar at MIT. (2003/04)
- LANGUAGES
- Bulgarian (native); Proficient in Spanish and Russian, basic German.
- PERSONAL INTERESTS
- Argentine tango, rock-climbing, painting, figure drawing, accordion, swimming.