

## Evangelos Markakis - Curriculum Vitae

---

### PERSONAL DATA

Birth: September 28, 1977, Athens, Greece  
Address: Dept. of Computer Science, 10 King's College Road, Toronto, ON M5S3G4, CANADA  
Phone: 416-928-0911  
Current Position: Postdoctoral Fellow, University of Toronto  
E-mail: [vangelis@cs.toronto.edu](mailto:vangelis@cs.toronto.edu)  
Homepage: <http://www.cs.toronto.edu/~vangelis>

### EDUCATION

#### **Georgia Institute of Technology**, Atlanta, Georgia, USA

Ph.D. in Computer Science (Algorithms, Combinatorics, and Optimization Program), 2005.

Dissertation Topic: Computational Aspects of Game Theory and Microeconomics

Advisor: Richard Lipton

M.Sc. in Computer Science, 2004.

GPA: 4/4

Relevant course work: Approximation Algorithms, Randomized Algorithms, Algorithmic Game Theory, PCP's and Hardness of Approximation, Optimization, Probability Theory, Abstract Algebra, Graph Theory, Algebraic Geometry, Combinatorics, Enumerative Combinatorics, Topology

#### **National Technical University of Athens**, Athens, Greece

Diploma (5-year B.Sc. degree with thesis) in Electrical and Computer Engineering, 1995-2000.

Thesis: Logics of Knowledge and Belief - Belief Revision

Advisor: Stathis Zachos

GPA: 9.35/10 (ranked 2nd out of 350)

### RESEARCH INTERESTS

Design and Analysis of Algorithms, Approximation Algorithms, Combinatorial Optimization, Computational aspects of Game Theory and Mathematical Economics, Auction Design, Electronic Commerce and the Internet, Machine Learning, Robotics (multi-robot routing applications).

### HONORS AND AWARDS

Best student paper award (ACM Conference on Electronic Commerce, EC 2003).

Dean's fellowship, College of Computing, Georgia Institute of Technology, 2000-2001.

Annual scholarship from the State Scholarships Foundation of Greece for high academic achievement, 1995-2000.

Annual scholarship from the Bodosakis Foundation for high academic achievement, 1995-2000.

Ranked 2nd in nationwide exams for college admission, Greece, 1995.

Award from the Greek Mathematical Society, 1994.

### PROFESSIONAL EXPERIENCE

#### **University of Toronto**, Toronto, ON, Canada

Postdoctoral Fellow: August 2005 - present.

Teaching: Introduction to the Theory of Computation, Fall 2005 and Fall 2006.

**Georgia Institute of Technology**, Atlanta, Georgia, USA

Research Assistant Fall 2000 - Fall 2001 and Summer 2002 - Summer 2005.

Teaching Assistant for the course 'Introduction to the Theory of Computation', Spring 2002.

**National Technical University of Athens**, Athens, Greece

Teaching Assistant for the course 'Compilers', Spring 2000.

Educational Software: participation in the design and implementation of an operating systems simulator, now used in the high school 'Operating Systems' course in Greece, 1999.

#### **Program Committee Member**

ACM Conference on Electronic Commerce (EC 2006).

Workshop on Internet and Network Economics (WINE 2006).

AAAI 2006 Workshop on Auction Mechanisms for Robot Coordination.

**Technical Reviewer:** The 13th ACM-SIAM Symposium on Discrete Algorithms (SODA 2002), the 44th Annual Symposium on Foundations of Computer Science (FOCS 2003), the 45th Annual Symposium on Foundations of Computer Science (FOCS 2004), The 16th ACM-SIAM Symposium on Discrete Algorithms (SODA 2005), the 37th Annual ACM Symposium on Theory of Computing (STOC 2005), the 6th Annual ACM Conference on Electronic Commerce (EC 2005), the 32nd International Colloquium on Automata, Languages and Programming (ICALP 2005), the 13th Annual European Symposium on Algorithms (ESA 2005), the 46th Annual Symposium on Foundations of Computer Science (FOCS 2005), the 17th ACM-SIAM Symposium on Discrete Algorithms (SODA 2006), the 38th Annual ACM Symposium on Theory of Computing (STOC 2006), the 3rd Workshop on Combinatorial and Algorithmic Aspects of Networking (CAAN 2006).

Journal Reviews: Games and Economic Behavior, Journal of Discrete Algorithms, IEEE Transactions on Automation Science and Engineering.

#### PAPERS UNDER REVIEW OR IN PREPARATION

H. Hatami, A. Magen, E. Markakis. Integrality gaps of semidefinite programs for Vertex Cover and relations to  $\ell_1$  embeddability of Negative Type metrics, in preparation.

R. Lipton, E. Markakis, A. van den Essen. Some Remarks on the Jacobian Conjecture and Connections with Hilbert's Irreducibility Theorem, submitted to *Journal of Algebra*.

R. Lipton, E. Markakis, A. Mehta. On Some Stability Properties of Economic Solution Concepts. In preparation.

M. Kolountzakis, R. Lipton, E. Markakis, A. Mehta, N. Vishnoi. On the Fourier coefficients of Symmetric Boolean Functions, submitted to *Combinatorica*.

R. Legrand, E. Markakis, A. Mehta. Approval Voting: Approximation Algorithms and Heuristics for the Minimax Solution, in preparation, preliminary version presented in *the 1st International Workshop on Computational Social Choice (COMSOC)*, 2006.

#### REFEREED CONFERENCE PUBLICATIONS

S. Khot, R. Lipton, E. Markakis, A. Mehta. Inapproximability Results for Combinatorial Auctions with Submodular Utility Functions, *1st Workshop on Internet and Network Economics (WINE)*, pp. 92–101, 2005.

M. Kolountzakis, E. Markakis, A. Mehta. Learning Symmetric Juntas in time  $n^{o(k)}$ , in the proceedings of *Interface entre l'analyse harmonique et la theorie des nombres*, CIRM, Luminy, October 2005.

M. Lagoudakis, E. Markakis, D. Kempe, P. Keskinocak, S. Koenig, C. Tovey, A. Kleywegt, A. Meyerson, S. Jain. Auction-based Multi-robot Routing, *Robotics: Science and Systems*, pp. 343-350, 2005, also appeared as nectar paper in *AAAI 2006*, journal version to be submitted to *Journal of Artificial Intelligence Research (JAIR)*.

R. Lipton, E. Markakis, A. Mehta, N. Vishnoi. On the Fourier Spectrum of Symmetric Boolean Functions with Applications to Learning Symmetric Juntas, *IEEE Conference on Computational Complexity (CCC 2005)*, pp. 112–119, 2005.

R. Lipton, E. Markakis, E. Mossel, and A. Saberi, On Approximately Fair Allocations of Indivisible Goods, *5th ACM Conference on Electronic Commerce (EC 2004)*, pp. 125–131, 2004.

R. Lipton, E. Markakis. Nash Equilibria via Polynomial Equations, *Latin American Theoretical Informatics (LATIN 2004)*, pp. 413–422, 2004.

E. Markakis, A. Saberi. On the Core of the Multicommodity Flow Game, *4th ACM Conference on Electronic Commerce (EC 2003)*, pp. 93-97, 2003. Recipient of the best student paper award. Invited for publication in special issue of *Decision Support Systems*.

R. Lipton, E. Markakis, A. Mehta. Playing Large Games using Simple Strategies, *4th ACM Conference on Electronic Commerce (EC 2003)*, pp. 36-41, 2003.

M. Mahdian, E. Markakis, A. Saberi, V. V. Vazirani. A Greedy Facility Location Algorithm Analyzed using Dual Fitting, *Proceedings of 5th International Workshop on Randomization and Approximation Techniques in Computer Science (APPROX-RANDOM)*, pp. 127–137, 2001.

I. Kerenidis, E. Markakis, K. Potika, C. Siaterlis. MEDUSA: An Operating Systems Simulator, *Internet-Education-Science*, pp. 52-54, 2000.

#### JOURNAL PUBLICATIONS

S. Khot, R. Lipton, E. Markakis, A. Mehta. Inapproximability Results for Combinatorial Auctions with Submodular Utility Functions, invited to *Algorithmica*, 2006.

E. Markakis, A. Saberi. On the Core of the Multicommodity Flow Game, *Decision Support Systems*, 39(1), pp. 3–10, March 2005.

K. Jain, M. Mahdian, E. Markakis, A. Saberi, V. V. Vazirani. Greedy Facility Location Algorithms Analyzed using Dual Fitting with Factor-Revealing LP, *Journal of the ACM*, 50 (6), pp. 795–824, November 2003.

#### INVITED TALKS

- On the Complexity of Some Fair Division Problems, National Technical University of Athens, Theory Seminar, June 2004.
- Computational Aspects of Game Theory and Microeconomics, University of Waterloo, Algorithms and Complexity Seminar, March 2005.
- Computational Aspects of Game Theory and Microeconomics, Yahoo Research Labs, April 2005.
- Computational Aspects of Game Theory and Microeconomics, University of Athens, Theory Seminar, February 2006.
- Inapproximability Results for Combinatorial Auctions with Submodular Utility Functions, INFORMS Annual Meeting, Session: Auctions, San Francisco, November 2005.

- Inapproximability Results for Combinatorial Auctions with Submodular Utility Functions, CWI, February 2006.
- Inapproximability Results for Combinatorial Auctions with Submodular Utility Functions, University of Waterloo, Tutte Seminar, March 2006.

#### REFERENCES

Prof. Richard J. Lipton (PhD advisor)  
College of Computing, Georgia Tech  
801 Atlantic Drive  
Atlanta, GA 30332, USA  
Email: rjl@cc.gatech.edu  
Phone: (+1) 404-894-6438

Prof. Avner Magen  
Dept. of Computer Science, University of Toronto  
10 King's College Road  
Toronto, ON M5S3G4, Canada  
Email: avner@cs.toronto.edu  
Phone: (+1) 416-946-8672

Prof. Ted Hill  
School of Mathematics, Georgia Tech  
686 Cherry street  
Atlanta, GA 30332, USA  
Email: hill@math.gatech.edu  
Phone: (+1) 404-607-9444

Prof. Stathis Zachos  
ECE Department, National Technical University of Athens  
9, Iroon Polytechniou street  
Athens, 15773, Greece  
Email: zachos@softlab.ece.ntua.gr  
Phone: (+30) 210-772-1646

Prof. Steven Brams  
Department of Politics, New York University (NYU)  
726 Broadway  
New York, NY 10003, USA  
Email: steven.brams@nyu.edu  
Phone: (+1) 212-998-8510