

Curriculum Vitae (as of 10/8/08)
Christopher M. Homan

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Department of Computer Science
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129 Edgerton St.
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RESEARCH AREAS

Computational complexity theory, computational economics, computational politics, cryptography, graph theory, heuristic algorithms, networking, simulation.

PH.D. THESIS

Exploiting and Eliminating Redundancy in Computation; University of Rochester, May 2003.

Ph.D. Advisor: Professor Lane Hemaspaandra, University of Rochester.

PERSONAL

U.S. Citizen; Born 8/5/69 in Jamestown, NY;

EDUCATION

- **University of Rochester**
Ph.D. in Computer Science, May 2003.
M.S. in Computer Science, 2000.
- **Cornell University**
A.B. in Mathematics, 1992.

TEACHING EXPERIENCE

- **Assistant Professor** (2003-present) Rochester Institute of Technology.
- **Teaching Assistant** (1999-2003) University of Rochester.
- **Adjunct Professor** (1994) Jamestown Community College.
- **Substitute Teacher** (1993) Jamestown, New York area.

INDUSTRIAL EXPERIENCE

- **Los Alamos National Laboratories D-2** (Summers 2001–2003, 2005) Los Alamos, NM.
Consultant (2005), Graduate Research Assistant (2001–2003). Collaborated with economist in study of computer-assisted experimental economics. Designed and wrote scheduler-driven market simulator for trading electrical power that incorporates three different market/auctioning scenarios, tens of thousands of consumers

(each with distinct, time-evolving bidding strategies), hundreds of sellers (each with distinct, time-evolving asking strategies), and a power grid that further constrains transactions.

- **Compaq Systems Research Center** (Summer 2000) Palo Alto, CA.
Research Intern. Studied graphical properties of the World Wide Web, focused on host-level subgraphs.
- **Electronic Data Systems** (1998) Rochester, NY.
Software Engineer. Designed and implemented the migration and integration of Xerox's entire system of asset management databases (~ 10 databases) into a single, new database.
- **Xerox Corporation Digital Toys** (1997–1998) Rochester, NY.
Software Engineer. Wrote software for demonstrating new concepts in mobile computing and document management to Xerox executives and lead users. Presented demonstrations at marketing, systems architecture, and lead user workshops.
- **The Rochester Group, Inc.** (1993–1997) Rochester, NY.
Software Engineer. Taught user-level seminar on Unix. Invented interface for a multidimensional database. Authored several interactive web applications, including a spreadsheet (to support a ~ 100 -person product design team at Xerox), a multidimensional database navigator, and an ordering system that allows Xerox sales reps to configure option packages for products by manipulating an image of the product. Wrote TCP/IP-based software management agent, which was installed on ~ 200 host computers nationwide. Wrote system to annually compose lease agreements, from information on three databases, for $\sim 20,000$ Xerox customers.

HONORS

- GAANN Fellowship.
- Empire State Scholarship of Excellence.

PROFESSIONAL SERVICE

- Referee: MFCS '08, IPL, STACS '07, Electronic Commerce '06 and '07, ICALP '06, COMSOC '06, Physics Letters A, Mathematical Reviews, MFCS '05, ICALP '02.
- Committees: Department Faculty Scholarship (2008–present), Institute Academic Support (2007–present), College Ph.D. (2003–present), Department Mentoring (chair, 2007), College Retention (2007), College FEAD (2006–2007, chair 2007), Department Curriculum (2006–2007), College Research Faculty Hiring (2006), College Associate Dean of Research Search (2006), Department Retention (2003–2006, chair 2004–2006), First 2-Years (2004–2005).

COMMUNITY ACTIVITIES

- Rochester Summer Network Science Reading Group (founder and administrator, 2008–present).
- Rochester Theory Canal (2000–present).
- GRADA Summer Ultimate League (2004 and 2006).
- Tutor: Sojourner House Study Buddy Program (2003).

REFEREED JOURNAL PAPERS

1. **Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners**, C. Homan, L. Hemaspaandra, *Journal of Heuristics*, December 2007 (online, print version to appear).
2. **Cluster Computing and the Power of Edge Recognition**, L. Hemaspaandra, C. Homan, S. Kosub, *Information and Computation*, 205(8):1274–1293, August 2007.
3. **The Complexity of Computing the Size of an Interval**, L. Hemaspaandra, C. Homan, S. Kosub, K. Wagner, *SIAM Journal on Computing*, 36(5):1264–1300, December 2006.
4. **Lower Bounds on the Ambiguity of Strong, Total, Associative, One-Way Functions**, C. Homan, *Journal of Computer and System Sciences*, 68(3):657-674, May 2004.
5. **One-Way Permutations and Self-Witnessing Languages**, C. Homan and M. Thakur, *Journal of Computer and System Sciences*, 67(3):608-622, November 2003.

ARTICLES

6. **One-Way Functions in Worst-Case Cryptography: Algebraic and Security Properties are on the House**, A. Beygelzimer, L. Hemaspaandra, C. Homan, and J. Rothe, *SIGACT News*, V. 30, #4, pp. 25–40, December 1999.

REFEREED CONFERENCE PAPERS

7. **On the Approximability of Dodgson and Young Elections**, I. Caragiannis, J. Covey, M. Feldman, C. Homan, C. Kaklamanis, N. Karanikolas, A. Procaccia, and J. Rosenschein, to appear in SODA '09.
8. **Dynamic social impact mechanisms in rumor propagation**, N. DiFonzo, M. Bourgeois, C. Homan, J. Suls, B. Brooks, D. Ross, P. Bordia, N. Stupak, M. Frazee, S. Brougher, N. Schwab, M. McKinlay, *Poster at Group Processes and Intergroup Relations Meeting at the 2008 Annual Conference of the Society for Personality and Social Psychology*, February 2008.
9. **Rumor Propagation: Modeling & Testing Dynamic Social Influence Mechanisms**, N. DiFonzo, P. Bordia, M. Bourgeois, B. Brooks, D. Ross, C. Homan, J. Suls, J. Beckstead, *Poster presented at the National Science Foundation Human and Social Dynamics 2007 Principal Investigators Meeting*, October 2007, Arlington, VA.
10. **Dichotomy Results for Fixed Point Counting in Boolean Dynamical Systems**, S. Kosub, C. Homan, *Proceedings of the 10th Italian Conference on Theoretical Computer Science*, October 2007.
11. **Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners**, C. Homan, L. Hemaspaandra, *1st International Workshop on Computational Social Choice*, December 2006.
12. **Smoother Transitions between Breadth-First-Spanning-Tree-Based Drawings**, C. Homan, A. Pavlo, and J. Schull, *Poster at the 14th Annual Symposium on Graph Drawing*, September 2006.

13. **Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners**, C. Homan, L. Hemaspaandra, *Proceedings of the 31st International Symposium on Mathematical Foundations of Computer Science*, August 2006.
14. **Cluster Computing and the Power of Edge Recognition**, L. Hemaspaandra, C. Homan, S. Kosub, *Proceedings of the Third International Conference TAMC 2006*, May 2006.
15. **Physical Clearing Mechanisms in Power Industry**, K. Atkins, C. Homan, A. Marathe, *Proceedings of the 2004 IEEE PES Power Systems Conference and Exposition*, October 2004.
16. **Marketecture: A Simulation-Based Framework for Studying Experimental Deregulated Power Market**, K. Atkins, C. Barrett, C. Homan, A. Marathe, M. Marathe, S. Thite, *Proceedings of the 6th IAEE European Energy Conference*, September 2004.
17. **Extracting Social Networks from Instant Messaging Populations**, A. Teredesai, J. Resig, S. Dawara, C. Homan, *Proceedings of the 7th ACM SIGKDD Workshop on Link KDD*, August 2004.
18. **One-Way Permutations and Self-Witnessing Languages**, C. Homan and M. Thakur, *Proceedings of the 17th IFIP World Computer Congress/2nd IFIP International Conference on Theoretical Computer Science*, pp. 243–254 , Kluwer Academic Publishers, August 2002.

SUBMISSIONS, TECH REPORTS, MANUSCRIPTS

19. **A Parent-Centered Radial Layout Algorithm for Interactive Graph Visualization and Animation**, A. Pavlo, C. Homan, and J. Schull, <http://arxiv.org/cs.HC/0606007>
20. **Plane Decompositions as Tools for Approximation**, M. Agnew and C. Homan, <http://arxiv.org/cs.DS/0602057>
21. **Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners**, C. Homan, L. Hemaspaandra, TR881, Computer Science Dept., U. Rochester, September 2005.
22. **Cluster Computing and the Power of Edge Recognition**, L. Hemaspaandra, C. Homan, S. Kosub, TR878, Computer Science Dept., U. Rochester, September 2005.
23. **The Complexity of Computing the Size of an Interval**, L. Hemaspaandra, C. Homan, S. Kosub, K. Wagner, TR856, Computer Science Dept., U. Rochester, February 2005; revised March 2005.
24. **Small Worlds, Locality, and Flooding on Landscapes**, Homan, C., Istrate, G., TR796, Computer Science Dept., U. Rochester, January 2003.
25. **One-Way Permutations and Self-Witnessing Languages**, C. Homan and M. Thakur, University of Rochester Department of Computer Science Technical Report 760, November 2001.
26. **Mining the Web for Site Structure**, C. Homan, Selected 2000 SRC Summer Intern Reports, November 2000.

27. **Low Ambiguity in Strong, Total, Associative, One-Way Functions**, C. Homan, University of Rochester Department of Computer Science Technical Report 734, August 2000, revised December 2002.
28. **One-Way Functions in Worst-Case Cryptography: Algebraic and Security Properties**, A. Beygelzimer, L. Hemaspaandra, C. Homan, and J. Rothe, University of Rochester Department of Computer Science Technical Report 722, November 1999.
29. **Market Design, Performance, and Efficiency in a Simulation-Assisted Experimental Electrical Power Market**, C. Barrett, C. Homan, A. Marathe, M. Marathe, and S. Thite, manuscript.

GRANTS

1. 2009: NSF CISE CAREER Award, “Social Influence and Choice.” Pending.
2. 2008: Provost’s Learning Initiative Grant (with Nicholas DiFonzo) “Sums of Squares and ANOVA Visualization Software for Teaching Statistics.” Not Awarded.
3. 2007: NSF CISE Theoretical Foundations ITR Grant, “Arborsculpture.” Not Awarded.
4. 2007: GCCIS Faculty Evaluation and Development Grant, **\$3,500** for travel to conferences. **Awarded.**
5. 2007: Provost’s Learning Initiative Grant (with Edith Hemaspaandra) “Internet-Assisted Learning in Theory of Computation.” Not Awarded.
6. 2006: NSF HSD Grant (with PI N. DiFonzo, P. Bordia, M. Bourgeois, B. Brooks, D. Ross, J. Suls, and J. Beckstead) “Rumor Propagation: Modeling & Testing Dynamic Social Influence Mechanisms.” **\$755,546, Awarded.**
7. 2006: NSA Mathematical Sciences Grant (with Edith Hemaspaandra and Stasek Radiszowski), “Ramsey theory: complexity and algorithms.” Not Awarded.
8. 2005: NSF CISE Theoretical Foundations ITR Grant (with PI Edith Hemaspaandra and Stasek Radiszowski), “Ramsey theory: complexity and algorithms.” Not funded.
9. 2004: GCCIS Faculty Evaluation and Development Grant, “Graph Visualization,” **\$3,500** plus one course release. **Awarded.**

SELECTED TALKS

1. **The Statistical Mechanics of Networks**, RIT Summer Reading Group in Network Science, 2008.

2. **Studying Rumor Propagation in Social Networks via Human-Computer Experiments**, RIT Research Computing Seminar Series, 2007.
3. **Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners**, 2nd Western New York Theory Day, Buffalo, New York, 2007.
4. **Dichotomy Results for Fixed Point Counting in Boolean Dynamical Systems**, 10th Italian Conference on Theoretical Computer Science, Rome, Italy, 2007.
5. **Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners**, 1st International Workshop on Computational Social Choice, Amsterdam, Holland, 2006.
6. **Guarantees for the Success Frequency of an Algorithm for Finding Dodgson-Election Winners**, The 31st International Symposium on Mathematical Foundations of Computer Science, Stara Lesna, Slovakia, 2006.
7. **Carving Lessons: How to Attack Hard Graph Problems**, CS-RIT Colloquia Series, RIT, 2006
8. **Algorithmic Aspects of Planar Graphs and Tree Decompositions**, Theory Canal Seminar Series, University of Rochester, 2005.
9. **Physical Clearing Mechanisms in Power Industry**, New York, IEEE PES Power Systems Conference and Exposition, 2004.
10. **Redundancy: Eliminating It, Exploiting It**, University of Rochester, thesis defense, 2003.
11. **The Complexity of Computing the Size of an Interval**, University of Rochester, part of a University of Rochester Theory Group seminar in honor of Manuel Blum, 2002.
12. **A Simulator of Power Markets**, Los Alamos National Laboratory, 2002.
13. **A Complexity-Theoretic Characterization of the Existence of One-Way Permutations**, SUNY Genesee, 2001.
14. **An Introduction to Interval-Size Functions**, Theory Canal Seminar Series, University of Rochester, 2001.
15. **Mining the Web for Site Structure**, Compaq Systems Research Center, 2000.