Sorelle A. Friedler

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EDUCATION

University of Maryland, College Park, MD **Ph.D.** August 2005 - August 2010
Computer Science. GPA 3.9. Thesis title: *Geometric Algorithms for Objects in Motion.* Advisor: David M. Mount.

University of Maryland, College Park, MD **M.S.** August 2005 - December 2007
Computer Science. GPA 3.8. Selected course work: Computational Geometry, Analysis of Algorithms, Theory of Programming Languages, Gene Finding and Genome Assembly, and College Teaching.

Swarthmore College, Swarthmore, PA **B.A.** August 2000 - May 2004
Computer Science. Minor: Mathematics. GPA in major: 3.7.

University of Ghana, Legon, Ghana Spring 2003
Study abroad.

TEACHING AND WORK EXPERIENCE

Software Engineer, Google

- Indoor Maps, April 2011 - present. Responsibilities: Implement an indoor location determination system running within Google Maps for Mobile on Android. Two provisional patent applications filed.
- Search Infrastructure, August 2010 - April 2011. Responsibilities: Design, conduct, and write reports on experiments relating to the quality of the Google search index (the list of URLs known to Google.)

Instructor, University of Maryland, College Park

- Summer 2009. Teach CMSC451: Design and Analysis of Computer Algorithms. Design and implement curriculum and projects, hold office hours, and grade papers. Topics include greedy algorithms, divide and conquer strategies, dynamic programming, network flow algorithms, NP-completeness, and approximation algorithms.
- Summer 2007. Teach CMSC330: Organization of Programming Languages. Design and implement curriculum and projects, hold office hours, grade papers, and oversee one teaching assistant. Topics include scripting languages (Ruby), regular expressions and finite automata, context-free grammars, functional programming (OCaml), concurrency, object-oriented programming (Java), and lambda calculus.

Research Assistant in Programming Languages, University of Maryland
Summer 2008. Work with Associate Professor Jeff Foster to develop a system to track type qualifiers dynamically in Java programs.

Intern in Integer Programming, AT&T Labs Research
Summer 2006. Work with Aaron Archer and David Applegate to implement a solution to the survivable network design problem for large graphs based on integer programming.

Teaching Assistant, University of Maryland, College Park

- Spring 2006. Teaching Assistant for CMSC311: Computer Organization. Hold office hours, organize, grade, and prepare projects.
- Fall 2005. Teaching Assistant and Discussion Section Leader for CMSC212: Low-level programming concepts. Teach two discussion sections each of which meets for two one-hour sessions each

week. Additional responsibilities include grading papers, implementing projects, and holding office hours.

Middle School Mathematics Teacher, Springside School, Philadelphia
Fall 2004 to Fall 2005. Design and implement curriculum for four classes of students in grades five through eight to teach topics including two- and three-dimensional geometry, pre-algebra, number theory, probability, and statistics. Explored teaching techniques including group learning and the discovery method.

Researcher, Programmer, and Designer, The Math Forum: `http://www.mathforum.org`
Periodically from 1997 to 2002. Research educational psychology to create an online mentoring guide. Design and program websites and associated databases and answer math questions for Ask Dr. Math, an online math question and answer service.

RESEARCH INTERESTS

The design and analysis of algorithms for geometric problems, especially problems regarding calculating statistical trends on moving data as a tool for scientific analysis. In addition, general interest in algorithm analysis and experimentation.

PAPERS

Thesis

Sorelle A. Friedler. Geometric Algorithms for Objects in Motion. Dissertation committee: Prof. David Mount (chair), Prof. William Gasarch, Prof. Samir Khuller, Prof. Steven Selden, Prof. Amitabh Varshney. Defense date: July 30, 2010.

Peer-reviewed Papers

Sorelle A. Friedler and David M. Mount. Spatio-temporal Range Searching over Compressed Kinetic Sensor Data. In *Proc. of the European Symposium on Algorithms (ESA)*, pages 386 – 397, 2010.

Sorelle A. Friedler and David M. Mount. Approximation algorithm for the kinetic robust k-center problem. *Computational Geometry: Theory and Applications*, 43(6-7):572-586, 2010.

Sorelle A. Friedler and David M. Mount. Compressing kinetic data from sensor networks. In *Proc. of the Fifth International Workshop on Algorithmic Aspects of Wireless Sensor Networks (AlgoSensors)*, pages 191 – 202, 2009.

Sorelle A. Friedler, Yee Lin Tan, Nir J. Peer, and Ben Shneiderman. Enabling teachers to explore grade patterns to identify individual needs and promote fairer student assessment. *Computers & Education*, 51(4):1467-1485, December 2008.

Technical Reports

Sorelle A. Friedler and David M. Mount. Realistic Compression of Kinetic Sensor Data. University of Maryland Computer Science Department, Technical Report CS-TR-4959, June 6, 2010.
`http://hdl.handle.net/1903/10114`

Book Reviews

Sorelle A. Friedler. Review of Pioneering Women in American Mathematics: the Pre-1940 PhD's by Judy Green and Jeanne LaDuke. SIGACT News 42(2): 37-41, 2011.

Sorelle A. Friedler. Review of Change is Possible: Stories of Women and Minorities in Mathematics by Patricia Clark Kenschaft. SIGACT News 41(2): 47-50, 2010.

AWARDS

Ann G. Wylie Dissertation Fellowship 2009-2010
Provides tuition, stipend, and health insurance for one semester. Awarded to "outstanding students working on the final stages of their dissertations."

AT&T Labs Fellowship Program 2006-2009
Provides tuition, stipend, health insurance, and conference funds for 3 years. Awarded to 5 "outstanding under-represented minority and women students" chosen from a national pool.

Verizon Fellowship 2006-2007
Monetary award for outstanding academic achievement.

Graduate School Fellow, University of Maryland 2005-2007
Monetary award for "academic merit, intellectual ability, and the student's potential to make a unique contribution to the diversity of the educational experience on this campus."

INVITED TALKS

European Symposium on Algorithms (ESA)
Sept. 7, 2010. *Spatio-temporal Range Searching Over Compressed Kinetic Sensor Data*

Second Workshop on Massive Data Algorithmics (MASSIVE 2010)
June 17, 2010. *Spatio-temporal Range Searching Over Compressed Kinetic Sensor Data*

Bryn Mawr College
Apr. 22, 2010. *Finding Nemo: A Sensor-Based Framework for Kinetic Data*

Swarthmore College
Feb. 22, 2010. *How Many Birds Are Overhead? Spatio-temporal Range Searching Over Compressed Kinetic Sensor Data*

Max Planck Institute for Software Systems
Feb. 2, 2010. *A Sensor-Based Framework for Kinetic Data*

Carleton College
Jan. 19, 2010. *A Sensor-Based Framework for Kinetic Data*

Toyota Technical Institute at the University of Chicago
Dec. 15, 2009. *A Sensor-Based Framework for Kinetic Data*

Ursinus College
Dec. 9, 2009. *A Sensor-Based Framework for Kinetic Data*

Fall Workshop on Computational Geometry
Nov. 13, 2009. *Spatio-temporal Range Searching Over Compressed Kinetic Sensor Data*

Swarthmore College
Oct. 23, 2009. *Compressing Kinetic Data From Sensor Networks*

Fifth International Workshop on Algorithmic Aspects of Wireless Sensor Networks
July 11, 2009. *Compressing Kinetic Data From Sensor Networks*

Arcadia University Mathematics Education Colloquium
Feb. 19, 2009. *How do Computers Solve Geometric Problems?* Presentation on computational geometry designed to help high school math teachers add enrichment material to their curriculum.

AT&T Research Labs Colloquium
Aug. 11, 2006. *An Implementation of Jain's Algorithm for Survivable Network Design.*

SERVICE

Interviewer, Google
Aug. 2010 - present. Attend interview training including two shadow interviews. Interview software engineering candidates.

Co-leader, Computer Science Dept. TA Orientation, University of Maryland
Fall 2007, Fall 2008, Fall 2009. Work with Prof. William Gasarch to design and run a one to two hour orientation for new teaching assistants describing responsibilities and teaching strategies.

Co-leader, Women in Computer Science, University of Maryland
Fall 2006 to Spring 2009. Co-leader for graduate student women in computer science group. Organize lunch discussions, potlucks, guest speakers, and orientation activities.

Member, Department Education Committee, University of Maryland
Fall 2008 to Spring 2009. Graduate student representative to the Computer Science Department Education Committee. Elected position.

Member, Graduate Admissions Committee, University of Maryland
Spring 2008, Spring 2009. Served on the graduate admissions committee for the Computer Science department.

Member, Graduate Visit Day and Orientation Committee, University of Maryland
Spring 2007 to Fall 2007. Work as part of a committee to organize visit day and orientation for the Computer Science department.

Member, Computer Science Department Council, University of Maryland
Fall 2006 to Spring 2007. Graduate student representative to the Department Council. Elected position.

OTHER INTERESTS

Computer Science education, especially with regards to women and under-represented minority students. African and Afro-Cuban drumming and Balinese Gamelan.