

## Education

- **Rutgers University** Piscataway, NJ  
*Ph.D. in Computer Science* *Expected: Spring 2012*
  - Advisors: S. Muthu Muthukrishnan and Danfeng Yao
  - Thesis: Streaming Models and Algorithms for Communication and Information Networks
- **Carnegie Mellon University** Pittsburgh, PA  
*B.S. in Computer Science, Double Major in Discrete Math and Logic* *May 2006*

## Research Interests

- Graph Algorithms, Streaming Algorithms
- Network Models, Information Diffusion, Community Discovery and Evolution
- Anomaly Detection, Security and Privacy in Data Sharing
- Graph Theory, Combinatorics, Cryptography, Complexity

## Awards and Achievements

- DHS Career Development Fellowship Spring 2009–Fall 2011  
Provides tuition and full-year stipend for graduate studies in selected disciplines
- Award for Best Talk - Math Graduate Student Seminar Spring 2010
- 1st place in CMU Microsoft PuzzleStorm Competition Fall 2006
- 1st place in CMU Math Department Spring Problem Contest Spring 2006
- 1st place in CMU Mobile Robot Competition Spring 2005
- William Lowell Putnam Mathematics Competition: rank 192/3545 Fall 2005
- William Lowell Putnam Mathematics Competition: rank 137/3615 Fall 2003

## Publications (available at [www.cs.rutgers.edu/~bthom/research](http://www.cs.rutgers.edu/~bthom/research))

- 1) “**Streaming Models and Algorithms for Communication and Information Networks**”. Brian Thompson and James Abello. (In preparation)
- 2) “**Towards Publishing Recommendation Data With Predictive Anonymization**”. Chih-Cheng Chang, Brian Thompson, Hui (Wendy) Wang, and Danfeng Yao. *Proceedings of the 5th ACM Symposium on Information, Computer and Communications Security (ASIACCS)*. Pages 24-35. Beijing, China. April 2010.
- 3) “**Privacy-Preserving Computation and Verification of Aggregate Queries on Outsourced Databases**”. Brian Thompson, Stuart Haber, William G. Horne, Tomas Sander, and Danfeng Yao. *Proceedings of the 9th International Symposium on Privacy Enhancing Technologies (PETS)*. Pages 185-201. Seattle, WA. August 2009.

- 4) “The Union-Split Algorithm and Cluster-Based Anonymization of Social Networks”.  
Brian Thompson and Danfeng Yao. *Proceedings of the 4th ACM Symposium on Information, Computer and Communications Security (ASIACCS)*. Pages 218-227. Sydney, Australia. March 2009.

## Workshop Papers, Posters, and Invited Talks

- **The Early Bird Gets the Buzz: Detecting Anomalies and Emerging Trends in Information Networks**
  - Doctoral Consortium at International Conference on Web Search and Data Mining (WSDM). Seattle, WA. February 2012. (Talk and Extended Abstract)
- **A Renewal Theory Approach to Anomaly Detection in Communication Networks**
  - DIMACS/CCICADA Interdisciplinary Seminar, Rutgers University. Piscataway, NJ. February 2011. (Invited Talk)
  - IBM T. J. Watson Research Center. Hawthorne, NY. January 2011. (Invited Talk)
  - National Association of Mathematicians, Undergraduate MathFest. Miami, FL. November 2010. (Invited Talk)
  - Command, Control, and Interoperability Center for Advanced Data Analysis (CCICADA) Research Retreat. Los Angeles, CA. October 2010. (Invited Talk)
  - Bell Laboratories, Alcatel-Lucent. Murray Hill, NJ. October 2010. (Invited Talk)
  - Workshop on Information in Networks (WIN). New York, NY. September 2010. (Poster)
- **Anomaly Detection in Volatile Time-Evolving Networks**
  - Workshop on Information in Networks (WIN). New York, NY. September 2009. (Poster)
- **Privacy-Aware Publishing of Netflix Data**
  - IEEE Symposium on Security and Privacy. Oakland, CA. May 2009. (Poster)
- **Social Role-Preserving Graph Anonymization Using Clustering**
  - Security and Privacy Day. IBM T. J. Watson Research Center, NY. December 2008. (Poster)
  - Rutgers Corporate Computing Day. Piscataway, NJ. September 2008. (Poster)

## Research Experience

- **Research in Data Mining** Fall 2009 – Present  
*Work with Dr. James Abello* *Rutgers University*
  - Proposed the REWARDS model for streaming data, based on ideas from renewal theory
  - Developed algorithms to uncover anomalous activity in communication networks, based on both temporal patterns and graph structure
  - Applied techniques to email, IP traffic, OSN messages, and Bluetooth proximity datasets
  - Extended the REWARDS model to study information diffusion and influence in Twitter
- **Internship at Lawrence Livermore National Lab** Summer 2009, Summer 2010  
*Work with Dr. Tina Eliassi-Rad* *Center for Applied Scientific Computing*
  - Studied models for evolution of social and communication networks
  - Developed techniques for network-based anomaly detection
- **Research in Data Privacy** Summer 2008 – Fall 2009  
*Work with Dr. Danfeng Yao* *Rutgers University*
  - Studied social role preservation in anonymization of social networks
  - Designed a robust protocol that preserves privacy in outsourced databases
  - Devised utility-preserving anonymization algorithms for sparse recommendation data

- **Research in Coding Theory** Fall 2007  
*Work with Dr. Mario Szegedy* *Rutgers University*
  - Worked on improvements to locally decodable codes
- **Research in Graph Theory** Summer 2007  
*Independent work* *Rutgers University*
  - Made progress towards a conjecture about perfect matchings on hypercubes
- **Research in Machine Learning** Summer 2005  
*Work with Dr. Albert Corbett* *Carnegie Mellon University*
  - Implemented natural language processing for a Cognitive Math Tutor
  - Developed new algorithms and classifiers, implemented using WEKA libraries
- **Research in Graph Theory** Spring 2004  
*Work with Dr. John Mackey* *Carnegie Mellon University*
  - Developed ideas to generate large graphs with extremal properties

## Teaching Experience

- **Data Structures and Algorithms** Summer 2008  
*TA for Dr. Louis Steinberg* *Rutgers University*
  - Held recitation sections and office hours, graded homeworks and exams
- **Graduate Algorithms** Fall 2007 – Spring 2008  
*TA for Dr. Michael Fredman and Dr. Endre Szemerédi* *Rutgers University*
  - Held office hours, graded homeworks and exams
  - Gave lecture in professor's absence
- **Great Theoretical Ideas in Computer Science** Spring 2006  
*TA for Dr. Luis Von Ahn* *Carnegie Mellon University*
  - Held recitation sections, office hours, and review sessions
  - Created and graded homeworks and exams
- **Discrete Mathematics** Fall 2003 – Fall 2004  
*TA for Dr. Richard Statman and Dr. John Mackey* *Carnegie Mellon University*
  - Held recitation sections, office hours, and review sessions
  - Created and graded homeworks and exams
- **Andrew's Leap Summer Program** Summer 2003, 2004  
*Instructor under Dr. Steven Rudich* *Carnegie Mellon University*
  - Summer program for advanced high school students
  - Taught classes on Programming, Graph Theory, and Combinatorial Games
  - Designed syllabus and supervised student projects

## Professional Activities

- Organizer, DHS Student-run Seminar Series (Fall 2010 – Fall 2011)
- Student Organizer, DIMACS Workshop on Algorithms in the Field (May 2011)
- Student Organizer, DIMACS/CCICADA Student Workshop on Where the Mathematical and Computational Sciences Meet Society (April 2011)
- Reviewer, 17th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD '11)

- Reviewer, 5th IFIP International Conference on Trust Management (IFIPTM '11)
- Reviewer, 4th IFIP International Conference on Trust Management (IFIPTM '10)
- Reviewer, 19th International World Wide Web Conference (WWW '10)
- Reviewer, 18th International Conference on Computer Communications and Networks (ICCCN '09)
- Treasurer, Computer Science Graduate Student Society (2008 – 2009)

## Seminar Talks

- **“Have Your Cake and Eat It Too: Algorithms and Cake-Splitting”** Summer 2011  
*DHS High School Student Conference on Discrete Mathematics* Rutgers University
- **“Let 'Em Eat Cake: Fair, Envy-Free, and Equitable Division”** Spring 2010  
*Graduate Mathematics Pizza Seminar* Rutgers University
- **“Cluster-Based Anonymization of Social Networks”** Spring 2009  
*Compilers, OS, Architecture and Networks Seminar* Rutgers University
- **“The Zarankiewicz Problem and Other Extremal Sports”** Fall 2008  
*Graduate Combinatorics Seminar* Rutgers University
- **“Coloring in the Lines: Cool Edge-Colorings of Hypercubes”** Fall 2008  
*Graduate Mathematics Pizza Seminar* Rutgers University
- **“Computational Geometry and Art Galleries”** Fall 2007  
*Graduate Combinatorics Seminar* Rutgers University
- **“The Secret of Nim: An Intro to Combinatorial Game Theory”** Spring 2007  
*Graduate Mathematics Pizza Seminar* Rutgers University

## Activities and Interests

- Community service, interfaith dialogue
- Ballroom dancing, modern square dancing, capoeira (a Brazilian martial art), music
- Recreational sports: soccer, racquetball, table tennis, ultimate frisbee, etc.
- Teaching: math, computer science, dance, anything
- Juggling, reciting digits of  $\pi$ , juggling while reciting digits of  $\pi$

## References

- **Dr. Fred Roberts**  
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## Teaching References

- **Dr. Steven Rudich**  
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