

Curriculum Vitae

Geetha Jagannathan

Department of Computer Science
Rutgers, The State University of New Jersey
New Brunswick, NJ

Contact information

67 Cobalt Lane
Westbury, NY 11590
Email: geetha@cs.rutgers.edu
Phone: (516) 338-2706
Home Page: <http://paul.rutgers.edu/~geetha/>
Citizenship: U.S.

Educational Attainment

- Ph.D. in Computer Science, Rutgers University, New Brunswick, Spring 2010 (expected).
Thesis: *Data Privacy in Knowledge Discovery*
Advisor: Professor Rebecca N. Wright
- M.S. in Computer Science, Stony Brook University, Stony Brook, NY, Fall 2003.
Thesis: *A Study of the Sum of Squares Heuristic for Variations of the Bin-Packing Problem*
Advisor: Professor Michael A. Bender
- Ph.D. in Mathematics, Indian Institute of Technology, Madras, May 1994.
Thesis: *A study of the singularity method for steady and unsteady linearized viscous flows*
Advisor: Professor A. Avudainayagam
- M.S. in Mathematics, Indian Institute of Technology, Madras, May 1990.
Thesis: *Solitons Theory*
Advisor: Professor A. Avudainayagam
- B.S. in Mathematics, University of Madras, India, May 1988.

Employment History

- 09/2007— *Graduate Assistant*, Rutgers University, NJ.
I work in cryptography and data privacy under the direction of Prof. Rebecca Wright. The work is funded by NSF through the PORTIA project.
- 01/2004—08/2007 *Research Assistant*, Stevens Institute of Technology, NJ.
I worked in cryptography and data privacy under the direction of Prof. Rebecca Wright. The work was funded by NSF through the PORTIA project.
- 09/2001—12/2002 *Teaching Assistant*, Stony Brook University, Stony Brook, NY.
I was a lab coordinator for the first course in programming. Also, I taught the course independently over a summer session.
- 10/2000—06/2001 *Senior Developer*, RightFreight, Inc., New York, NY.
My core project involved the creation of the software infrastructure for this startup company. I single-handedly wrote the kernel for the first version of the system in Java.
- 08/1999—11/2000 *Postdoctoral Researcher*, Department of Physics, Hofstra University, NY.
I worked at the Center for Arrhythmia on computational models for cardiac phenomena.
- 08/1998—03/1999 *Assistant Professor*, Indian Institute of Technology, Madras.
I taught undergraduate students who majored in various disciplines of engineering, and graduate students in mathematics. I also on the modeling of fluid dynamics problems using hybrid finite element methods.

- 08/'97—08/1998 *Research Scholar*, Chennai Mathematical Institute, India.
I worked on Lie algebras and other related topics in preparation for doing research in quantum groups.
- 08/1994—08/1997 *Lecturer*, Sri Venkateswara College of Engineering, India.
I taught undergraduate computer, electrical and mechanical engineering students, and graduate students in the Masters in Computer Applications program. I performed research in analyzing and solving differential equations using techniques such as wavelet and Fourier transforms.

Research Interests

My research lies in the general area of Trustworthy Computing, with an emphasis on privacy-preserving data analysis and secure methods for distributed computation. The purpose of my research is to develop algorithms, protocols and theories for preserving the privacy of individuals and institutions when their data is released for public use or when their data is used in the computation of aggregate structures. My interests are currently focussed on practical methods for: (i) constructing utility efficient data mining techniques from differentially-private summaries, (ii) differentially-private anonymization of graphs such as social networks, (iii) differentially-private release of time series and (iv) differential privacy for distributed data. Much of my research involves creating new machine learning/data mining algorithms that preserve privacy.

Teaching Interests

With a doctoral degree in Mathematics, and a second one soon in Computer Science, I have the ability to teach a wide range of courses in the undergraduate and graduate levels. I strongly believe that a person with a Ph.D. in Computer Science should be able to teach almost any undergraduate course in the discipline, and certainly the fundamental computer science courses in programming, discrete mathematics, data structures, algorithm analysis and design, operating systems and computer organization. My research interests lie broadly in the areas of algorithms, computational complexity and cryptography. Correspondingly, my teaching interests are more focused in computational complexity, computability theory and cryptography at the graduate level. However, I am fully capable of also teaching courses in Probability, Machine Learning, Data Mining, and Databases.

Publications

1. Anonymizing Databases for Regression, with K. Pillaipakkamnatt and R.N. Wright. To be submitted to KDD 2010, in preparation.
2. A Practical Differentially Private Random Decision Tree Classifier, with K. Pillaipakkamnatt and R.N. Wright. Proceedings of the ICDM International Workshop on Privacy Aspects of Data Mining, 2009. Invited to appear as a journal paper in Transactions on Data Privacy.
3. Communication-Efficient Privacy-Preserving Clustering, with K. Pillaipakkamnatt, D. Umano and R.N. Wright (sent for second review, Transactions on Data Privacy).

4. Privacy-preserving imputation of missing data, with R.N. Wright. *Data and Knowledge Engineering* 65(1): 40-56 (2008)
5. A Secure Clustering Algorithm for Distributed Data Streams, with K. Pillaipakkamnatt and D. Umamo, *Proceedings of the ICDM International Workshop on Privacy Aspects of Data Mining*, 2007.
6. Private Inference Control For Aggregate Database Queries, with R. N. Wright, *Proceedings of the ICDM International Workshop on Privacy Aspects of Data Mining*, 2007.
7. Sum-of-squares heuristics for bin packing and memory allocation, with M.A. Bender, B. Bradley, and K. Pillaipakkamnatt. *ACM Journal of Experimental Algorithmics* 12: (2007)
8. Privacy-Preserving Data Imputation, with R.N.Wright, *Proceedings of the ICDM International Workshop on Privacy Aspects of Data Mining*, 2006.
9. A New Privacy-Preserving Distributed k-Clustering Algorithm, with K. Pillaipakkamnatt and R. N. Wright, *Proceedings of the 2006 SIAM International Conference on Data Mining*, 2006.
10. Privacy-Preserving Distributed k-Means Clustering over Arbitrarily Partitioned Data, with R. N. Wright, *Proceedings of the 11th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, 2005.
11. The Robustness of the Sum-of-Squares Algorithm for Bin Packing, with M.Bender,et al. *ALENEX/ANALC* 2004: 18-30.
12. Alternans and the onset of ventricular fibrillation, with Harold M. Hastings, et al. *Physical Review E*. Volume 62, 2000, pp 4043-4048.
13. One the Image System of Certain Line Singularities in the Vicinity of a Circular Cylinder, with A. Avudainayagam. *MechanicsResearchCommunications*. Volume25,1998,pp 25-32.
14. A Boundary Integral Equation Formulation for the Two Dimensional Oscillating Stokes Flow Past an Arbitrary Body, with A. Avudainayagam. *Journal of Engineering Mathematics*. Volume 33, 1998, pp 251-258.
15. A Necessary Condition for the Existence of Plane Stokes Flows Around An Ellipse, with A. Avudainayagam. *Canadian Applied MathematicsQuarterly*. Volume 3, 1995, pp 237-251.
16. Oscillating Line Singularities of Stokes Flows, with A. Avudainayagam. *International Journal of Engineering Science*. Volume 31, 1995, pp 1295-1299
17. Unsteady Singularities of Stokes Flows in Two Dimensions, with A. Avudainayagam. *International Journal ofEngineering Science*. Volume 33, 1995, pp 1713-1724.
18. Oscillating Stokes Flows in Two Dimensions, with A. Avudainayagam. *Mechanics Research Communications*. Volume21, 1994, pp 617-628.

Courses Taught

1. Introductory Programming
2. Discrete Mathematics
3. Probability and Statistics
4. Data Structures
5. Compiler Construction
6. Automata Theory
7. Numerical Methods
8. Engineering Mathematics
9. Fluid Dynamics

Grants and Honors

- Stevens Institute of Technology, Department of Computer Science, Outstanding Graduate Student Award
- “Finite Element Analysis of Navier-Stokes Equations,” awarded by the Indian Institute of Technology, Madras. Rupees 100,000
- CMI fellowship (1997-1998), awarded by the Chennai Mathematics Institute, Madras, India
- CSIR fellowship (1992-1994), awarded by the Council of Scientific and Industrial Research, India
- IIT fellowship (1990-1992), awarded by the Indian Institute of Technology, Madras, India
- National Merit Scholarship (1983-1988), awarded by the Government of India

References

- Professor Rebecca N. Wright, Department of Computer Science, Rutgers University, New Brunswick, NJ. Email: Rebecca.Wright@rutgers.edu
- Professor Danfeng Yao, Department of Computer Science, Rutgers University, New Brunswick, NJ. Email: danfeng@cs.rutgers.edu
- Professor Michael A. Bender, Department of Computer Science, Stony Brook University, Stony Brook, NY. Email: bender@cs.sunysb.edu