

Shiva Prasad Kasiviswanathan

346D IST Building
Department of Computer Science and Engineering
Pennsylvania State University
University Park, PA 16802

Phone: +1-(814)-404-6946
Fax: +1-(814)-865-3176
kasivisw@cse.psu.edu
<http://www.cse.psu.edu/~kasivisw>

RESEARCH INTERESTS

Design and Analysis of Algorithms, Approximation Algorithms, Combinatorial Optimization, Computational Complexity, Computational Geometry, Data Privacy, Property Testing.

EDUCATION

Ph.D. Candidate, Computer Science and Engineering 2003 - Present
Pennsylvania State University, University Park, PA, USA.
Thesis: Algorithms for Counting Problems.
Advisor: Prof. Martin Fürer.
Expected Graduation: Summer 2008.

Bachelor of Engineering, Computer Science and Engineering 1999 - 2003
Sri Venkateswara College of Engineering, University of Madras, India.

WORK EXPERIENCE

Theory Group, Pennsylvania State University Fall 2003 - 2005, Fall 2007 - Present
Research Assistant, supervised by Prof. Martin Fürer.
Research in algorithms, computational complexity, computational geometry.

CCS-5 Group, Los Alamos National Lab Summers of 2005, 2006
Graduate Research Intern, supervised by Dr. Anders Hansson and Dr. Gabriel Istrate.
Research in combinatorics, social networks.

Pennsylvania State University Spring 2005 - Spring 2007
Teaching Assistant for CSE 430 Project Design.
Guided around thirty senior year students through the process of constructing an autonomous robot.

Theory Group, Pennsylvania State University Summer 2007
Research Assistant, supervised by Prof. Sofya Raskhodnikova.
Research in database privacy, property testing.

PUBLICATIONS (Note: Authors are listed in alphabetical order)

- [1] S. P. Kasiviswanathan, H. K. Lee, K. Nissim, S. Raskhodnikova, A. Smith. What Can We Learn Privately? In 49th Annual IEEE Symposium on Foundations of Computer Science (FOCS), 2008.
- [2] M. Fürer, S. P. Kasiviswanathan. Approximately Counting Embeddings into Random Graphs. In 12th International Workshop on Randomization and Computation (RANDOM), 2008.
- [3] S. R. Ganta, S. P. Kasiviswanathan, A. Smith. Composition Attacks and Auxiliary Information in Data Privacy. In 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2008.
- [4] P. Berman, J. Jeong, S. P. Kasiviswanathan, B. Urgaonkar. Packing to Angles and Sectors. In 19th ACM Symposium on Parallel Algorithms and Architectures (SPAA), pp. 171-180, 2007.

- [5] M. Fürer, S. P. Kasiviswanathan. Spanners for Geometric Intersection Graphs. In 10th Workshop on Algorithms and Data Structures (WADS), pp. 313-325, 2007. Invited to special issue of Computation Geometry: Theory and Applications devoted to selected papers from WADS '07.
- [6] P. Berman, S. P. Kasiviswanathan. Faster Approximation of Distances in Graphs. In 10th Workshop on Algorithms and Data Structures (WADS), pp. 542-553, 2007.
- [7] M. Fürer, S. P. Kasiviswanathan. Exact MAX 2-SAT: Easier and Faster. In 33rd Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM), pp. 272-283, 2007.
- [8] M. Fürer, S. P. Kasiviswanathan. Approximate Distance Queries in Disk Graphs. In 4th Workshop on Approximation and Online Algorithms (WAOA), pp. 174-187, 2006.
- [9] A. Hansson, G. Istrate, S. P. Kasiviswanathan. Combinatorics of TCP Reordering. In Journal of Combinatorial Optimization 12, no 1-2, pp. 57-70, 2006.
- [10] M. Fürer, S. P. Kasiviswanathan. Algorithms for Counting 2-SAT Solutions and Colorings with Applications. In 3rd Conference on Algorithmic Aspects in Information and Management (AAIM), pp. 47-57, 2007. Full version appeared as Electronic Colloquium on Communication Complexity (ECCC) report TR05-33.
- [11] M. Fürer, S. P. Kasiviswanathan. Approximately Counting Perfect Matchings in General Graphs. In 2nd Workshop on Analytic Algorithmics and Combinatorics (ANALCO), pp. 263-272, 2005.
- [12] M. Fürer, S. P. Kasiviswanathan. An Almost Linear Time Approximation for the Permanent of a Random (0-1) Matrix. In 24th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), pp. 263-274, 2004.

WORKING PAPERS

- [1] M. Fürer, S. P. Kasiviswanathan. Spanners for Geometric Intersection Graphs with Applications. Submitted to Computation Geometry: Theory and Applications. Preliminary versions appeared in WADS '07 and WAOA '06.
- [2] B. Zhao, S. P. Kasiviswanathan, B. Urgaonkar, S. Vasudevan. Bandwidth Provisioning in Infrastructure-based Wireless Networks Employing Directional Antennas. Manuscript, 2007.

HONORS AND AWARDS

Pennsylvania State University CSE Graduate Research Assistant Award, 2008.

Best paper award at 33rd Conference on Current Trends in Theory and Practice of Computer Science for "Exact Max 2-SAT: Easier and Faster", 2007.

National Scholarship Scheme Student Scholarship 1999-2003 (partly sponsored by the government of India for my undergraduate studies).

TALKS AND PRESENTATIONS

24th Conference on Foundations of Software Technology and Theoretical Computer Science, 2004.
 2nd Workshop on Analytic Algorithmics and Combinatorics, 2005.
 Los Alamos National Laboratory, 2005.

Penn State Computer Science Theory Seminar, 2005.
 16th Fall Workshop on Computational Geometry, 2006.
 Los Alamos National Laboratory, 2006.
 33rd Conference on Current Trends in Theory and Practice of Computer Science, 2007.
 Penn State Computer Science Theory Seminar, 2007.
 3rd Conference on Algorithmic Aspects in Information and Management, 2007.
 19th ACM Symposium on Parallel Algorithms and Architectures, 2007.
 The Institute of Mathematical Sciences, India, 2007.
 DIMACS Workshop on Data Privacy, 2008.

Selected Course Projects

Modified the Nachos operating system to allow for additional functionality, including multiprogramming, virtual memory management, thread synchronization, and I/O simulation. Implementation language: C++.

Constructed a compiler for the Tiger programming language. Implementation language: C.

Designed and implemented genetic algorithm based solutions for instruction scheduling in IA-64 compiler. Implementation language: C++.

Implemented advanced data structures such as red-black trees, skip lists, and various graph-theoretic algorithms. Implementation language: C.

Software Packages

Programming Languages	C, C++, Java, HTML
Operating Systems	Unix (and variants), Linux, Windows
Additional	Shell Scripts, TCP/IP, MPI, Matlab, Mathematica

CITIZENSHIP/VISA STATUS

Indian, F1 (student) visa.

REFERENCES

Prof. Martin Fürer
 Department of Computer Science and Engineering
 Pennsylvania State University
 346F, IST Building, University Park, PA 16802
 Phone: +1-(814)-863-1857
 furer@cse.psu.edu

Prof. Sofya Raskhodnikova
 Department of Computer Science and Engineering
 Pennsylvania State University
 343F, IST Building, University Park, PA 16802
 Phone: +1-(814)-863-0608
 sofya@cse.psu.edu

Dr. Anders Hansson
 Team Leader, Generic Methods
 Information Sciences Group (CCS-3)
 Los Alamos National Laboratory, Los Alamos, NM 87545
 Phone: +1-(505)-665-3721
 hansson@lanl.gov

Prof. Piotr Berman
 Department of Computer Science and Engineering
 Pennsylvania State University
 346G, IST Building, University Park, PA 16802
 Phone: +1-(814)-865-1611
 berman@cse.psu.edu

Prof. Adam Smith
 Department of Computer Science and Engineering
 Pennsylvania State University
 338K, IST Building, University Park, PA 16802
 Phone: +1-(814)-836-0076
 asmith@cse.psu.edu

Prof. C.R. Subramanian
 The Institute of Mathematical Sciences
 324, CIT Campus, Tharamani
 Chennai 600013, India
 Phone: +91-(44)-2254-3324
 crs@imsc.res.in