

Manan Sanghi

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Academic Background

- Ph.D.** Northwestern University, USA (2004-present)
Candidate in Department of Electrical Engineering Computer Science
Expected graduation date: June, 2006
- M. S.** Northwestern University, USA (2002-2004)
Department of Computer Science
- B. Tech.** Indian Institute of Technology, Delhi, India (1998-2002)
Computer Science and Engineering
Departmental Rank 4 / 45

Research Interests

Design and analysis of algorithms, combinatorial optimization, mechanism design

Application areas: Bioinformatics, network security, autonomic computing,
musical information retrieval, DNA word design,
P2P networks and e-commerce

Work Experience

- Research Experience** Northwestern University (2002-2006)
Graduate Research Assistant to Prof. Ming-Yang Kao
Projects:
- Motif Finding in Biosequences
 - A Bottleneck Traveling Salesman Problem for NMR protein structure prediction
 - Combinatorial DNA Word Design
 - Polymorphic Worm Signature Generation
- Indian Institute of Technology Delhi (2001-2002)
Undergraduate B. Tech. Research Project
Advisor Prof. Sandeep Sen
Thesis: Distribution Sensitive Algorithms
- IBM Research Lab, India (Summer 2001)
Summer Internship
Advisor: Prof. Rajeev Shorey
Project: Algorithms for Passive Network Monitoring
- Teaching Experience** Northwestern University (2003-2005)
Teaching Assistant
- Algorithmic Techniques for Bioinformatics (Fall 2003, Fall 2004, Fall 2005)
 - Analysis and Design of Algorithms (Spring 2004)
 - Mathematical Foundations of Computer Science (Winter 2005)

Publications

- 1) Hamsa: Fast Signature Generation for Zero-day Polymorphic Worms with Provable Attack Resilience
Zhichun Li, Manan Sanghi, Brian Chavez, Yan Chen and Ming-Yang Kao
IEEE Symposium on Security and Privacy, 2006, to appear
- 2) Polyphonic Musical Sequence Alignment for Database Search
Bryan Pardo, and Manan Sanghi, ISMIR 2005, International Conference on Music Information Retrieval, London, England, 2005
- 3) Randomized Fast Design of Short DNA Words
Ming-Yang Kao, Manan Sanghi, and Robert Schweller, ICALP 2005, Lisboa, Portugal, 2005
- 4) Flexible Word Design and Graph Labeling
Ming-Yang Kao, Manan Sanghi, and Robert Schweller,
Under submission
- 5) An Optimization Problem in Adaptive Virtual Environments
A. Sundararaj, M. Sanghi, J. Lange, P. Dinda, ACM SIGMETRICS Performance Evaluation Review, Volume 33, Number 2, 2005.
- 6) Sub-linear Algorithms for Landmark Discovery from Black Box Models
Manan Sanghi, Praveen Paritosh, and Reuben Thomas, Qualitative Reasoning 2005.
- 7) An Approximation Algorithm for a Bottleneck Traveling Salesman Problem
Ming-Yang Kao and Manan Sanghi
Under submission
- 8) Magnolia: Enabling Keyword Searches in Structured P2P Systems
Ashish Gupta, Manan Sanghi, Peter Dinda and Fabian Bustamante
Poster at NSDI 2005, Boston, USA
Under preparation
- 9) Startegy-proof Online Pricing of Digital Goods
Ming-Yang Kao and Manan Sanghi
Under preparation
- 10) Tree Interval Graph Recognition
Pat Charoenpong, Ming-Yang Kao and Manan Sanghi
Under preparation

For details of recent projects and publications, visit <http://www.cs.northwestern.edu/~msanghi/research>

Presentations

- 1) Randomized Fast Design of Short DNA Words
32nd International Colloquium on Automata, Languages and Programming (ICALP 2005),
Lisboa, Portugal, 2005
- 2) Randomized Fast Design of Short DNA Words
50th Midwest Theory Day, University of Illinois, Urbana Champaign, Illinois, USA, 2005
- 3) Flexible Word Design and Graph Labeling
51st Midwest Theory Day, University of Wisconsin, Milwaukee, Illinois, USA, 2005

Awards and Honors

- Piros fellowship award in 2002
- Merit award for being among the top 7% in Computer Science Department, IIT Delhi
- 12th rank in Regional Mathematical Olympiad (RMO)
- 3rd rank in Junior Mathematical Olympiad (JMO)
- 97th rank in IIT-JEE 1998

References

Ming-Yang Kao

PhD Advisor

Professor, Department of Electrical Engineering and Computer Science

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