CURRICULUM VITAE

Rimli Sengupta

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EDUCATION

- Ph.D., Computer Science, Georgia Tech, September 1995

- M. S., Computer Science, Georgia Tech, September 1993

- M. Tech. (with thesis), Electrical Engg, IIT Kanpur, India, May 1989

- B. Engg., Electronics & Telecomm. Engg, Jadavpur University, Calcutta, India, July 1987

RESEARCH INTERESTS

- Computational complexity theory – lower bounds in circuit complexity, communication complexity, interactive proof systems, reducibility notions for combinatorial optimization problems.

- Distributed computing – knowledge complexity, fault-tolerant membership protocols.

- Algorithm design – randomized algorithms.

- Mobile computing – routing in ad-hoc networks.

- Computational molecular biology – genetic regulatory networks, detection of transcription factor binding sites, pattern retrieval from protein interaction maps.

PROFESSIONAL EXPERIENCE

- September 1999 to present: Research Assistant Professor, Dept. of Computer Science and Engg., University of Washington, Seattle, Washington.

- June 1998 to August 1999: Visiting Scholar, Dept. of Computer Science and Engg., University of Washington, Seattle, Washington.

- August 1995 to August 1999: Assistant Professor, Dept. of Computer Science, Rose-Hulman Institute of Technology, Terre Haute, Indiana. (On-leave during 1998-99)

- June 1997 to August 1997: Visiting Researcher, Computer Science Division, University of Texas, San Antonio, Texas.

- September 1994 to March 1995: Instructor, College of Computing, Georgia Tech, Atlanta, Georgia.

TEACHING EXPERIENCE

Analysis of Algorithms (Fall 95, Fall 97), Theory of Computation (Winter 95, Fall 96, Fall 99), Data Structures (Winter 96, Winter 97), Understanding and Constructing Proofs (Fall 94), Computer Architecture (Fall 95, Spring 96, Fall 96, Winter 97, Fall 97, Winter 98), Operating Systems (Spring 97, Spring 98), Systems Programming (Winter 96), Intro. to Computing (Spring 96, Fall 96, Spring 97, Fall 97).

PROFESSIONAL ACTIVITIES

- **Recent Invited Presentations**:

  1. *Design vs. Use: Do We Have to Choose?*, Workshop on Future Directions of CS2, Duke University, North Carolina, March 1997.

  2. *Routing in Mobile Ad hoc Networks: State of the Art and Future Directions*, Colloquium at the Dept. of Electrical Engg, University of Texas, San Antonio, July 1997.

  3. *Complexity = Computational Complexity?*, Minisymposium on Complexity, Indiana State University, Indiana, March 1998.

  4. *Shifting Waters on a Mutant Terrain*, Colloquium at the Dept. of Computer Science, IIT, Kharagpur, India, September 1998.

  5. *Learning Cis-regulatory Logic from Promoter Perturbation Data*, Hood Lab Retreat, Rocky Mountain National Lab, Hamilton, Montana, September 1999.

- **Recent Cross-disciplinary Activities On Campus at UW:**

  1. Member of Ph.D. dissertation committee of Trey Ideker, a graduate student at Molecular BioTechnology (MBT), June 1999.

  2. Invited participant in a cross-disciplinary training grant application to NIH, under the leadership of Prof. Barbara Trask, Acting Chair, MBT, October 1999.

  3. Invited participant faculty in UW's interdisciplinary graduate program in Computational Biology, spanning 9 departments within UW and two units within the Fred Hutchinson Cancer Research Center, November 1999.

  4. Participant in Cell Systems Initiative, a systems engineering approach to cell modeling, with Larry Arnstein (CSE), Bob Franza (MBT), Les Atlas (EE), Blake Hannaford (EE) and Howard Chizeck (EE), December 1999.

- **Grant Proposals and Awards**

  1. *R. Sengupta, F. Berry, R. Waite*, "Curriculum Development Proposal for a Course Sequence in Computer Architecture," funded in full for the requested amount ($10,000) by the *Foundation Coalition Upper Division Curriculum Program* (internal to Rose-Hulman Inst. of Technology), May 1996. Purpose: funding a course sequence development; duration: 6/96 - 8/96.

  2. *R. Sengupta*, "POWRE: Applying Probabilistic Techniques to Modeling and Routing in Mobile Ad Hoc Networks," funded in full for the requested amount ($132,854) by the *National Science Foundation*, May 1998. Purpose: funding a visit to the University of Washington; duration: 6/98 - 8/99.

  3. *R. Sengupta*, "Exploring Algorithmic Techniques for Inferring Genetic Regulatory Networks," awarded a fellowship ($100,000) by the *Alfred P. Sloan Foundation*, April 1999. Purpose: funding a transition into Computational Molecular Biology; duration: 09/99 - 08/01.

PUBLICATIONS

PUBLISHED or ACCEPTED in a REFEREED JOURNAL

1. *R. Sengupta*, "Cancellation Is Exponentially Powerful for Computing the Determinant," *Information Processing Letters* 62 (1997), 177-181.

2. *R. Sengupta and H. Venkateswaran*, "A Lower Bound for Monotone Arithmetic Circuits Computing 0-1 Permanent," *Theoretical Computer Science* 209:1-2 (1998), 389-398.

3. *R. Sengupta and H. Venkateswaran*, "Non-cancellative Boolean Circuits: A Generalization of Monotone Boolean Circuits." Accepted for publication in *Theoretical Computer Science*, May 1998.

PUBLISHED in PROCEEDINGS of a REFEREED CONFERENCE

1. *R. Sengupta and H. Venkateswaran*, "Non-cancellative Boolean Circuits: A Generalization of Monotone Boolean Circuits." In Proc. 16th Foundations of Software Technology and Theoretical Computer Science, *Lecture Notes in Computer Science*, 108 (1996), 298-309.

2. *S. R. Das, R. Castañeda, J. Yan and R. Sengupta*, "Comparative Performance Evaluation of Routing Protocols for Mobile Ad hoc Networks." In Proc. 7th International Conference on Computer Communication and Networks, IEEE Computer Society Press, October 1998.

3. *D. Mutchler, C. Anderson, C. Laxer, R. Sengupta, F. Young*, "CS1 Closed Laboratories = Multimedia Materials + Human Interaction." In Proc. 4th ACM SIGCSE/SIGCUE Conference on Innovation and Technology in Computer Science Education, June 1999.

OTHER

1. *R. Sengupta and H. Venkateswaran*, "Structured Reductions Among Combinatorial Optimization Problems," Technical Report GIT-CC-91-30, May 1991.

2. *R. Sengupta*, "Topics in Interactive Proof Systems," Technical Report GIT-CC-92-07, November 1991.

3. *R. Sengupta*, "A Lower Bound for Non-commutative Arithmetic Circuits," Technical Report GIT-CC-94-05, August 1993.

4. *R. Sengupta and H. Venkateswaran*, "Multilinearity Can be Exponentially Expensive," Technical Report GIT-CC-94-40, September 1994.

5. *R. Sengupta and H. Venkateswaran*, "A Lower Bound for Boolean Permanent in Bijective Boolean Circuits and Its Consequences," Technical Report GIT-CC-94-55, November 1994.

6. *R. Sengupta*, "Lower Bounds for Natural Functions in Restricted Boolean Circuits," Ph.D. Dissertation, Georgia Tech, June 1995.

7. *R. Sengupta and D. Mutchler*, "Design vs. Use: Do We Have to Choose?," position paper for *NSF Workshop on Future Directions of CS2*, Duke University, North Carolina, March 1997.

HONORS

1. Phi Beta Delta (President, Rose-Hulman chapter 09/97 - 05/98)

2. Volunteer of the month (for voluntary services to the Adult Literacy program at the county public library in Terre Haute, Indiana) March 1998.