

Sushmita Ruj
Cryptology Research Group
Applied Statistics Unit
Indian Statistical Institute, Kolkata, INDIA

Education

Ph. D. (Computer Science), *Indian Statistical Institute*, Kolkata, India (Thesis Submitted).

Title of thesis : Application of Combinatorial Structures to Key Predistribution in Sensor Networks using Combinatorial Designs.

Thesis Supervisor: Prof. Bimal Roy.

M.Tech (Computer Science), *Indian Statistical Institute*, Kolkata, India, 2006.

B.E. (Computer Science), *Bengal Engineering College (D.U.)*, Shibpur, India, 2004.

C.B.S.E (10 + 2), *D.A.V. Model School*, Durgapur, India, 2000.

I.C.S.E (Class 10), *Carmel School, Steel Township*, Durgapur, India, 1998.

Research Interests Combinatorics, Graph Theory, Cryptology and Coding Theory.

Courses Taught

Software Engineering: M.Tech (Computer Science), Indian Statistical Institute, Kolkata, January, 2007 - May, 2007.

Academic Achievements

- Best Paper Award at The Fifth International Symposium on Parallel and Distributed Processing and Applications, ISPA07.
- ISI Special Fellowship, for Ph. D., Indian Statistical Institute, Kolkata, INDIA.
- Qualified for Joint Entrance Screening Test, in Theoretical Computer Science in 2006 (Rank: 4), and 2004 (among top 18).
- Selected for Visiting Students Research Program (VSRP 2005), at Tata Institute of Fundamental Research, Mumbai, India.
- 86th position in state wise Joint Entrance Test, 2000, held in the state of West Bengal, India.
- Awarded All India Talent Search Award Scholarship, 1997.

Research Papers

- Sushmita Ruj and Bimal Roy. Key Predistribution using Partially Balanced Designs in Wireless Sensor Networks in *Proceedings of The Fifth International Symposium on Parallel and Distributed Processing and Applications, ISPA07.*, Niagara Falls, Canada, LNCS 4742, pp 431-445, 2007. **Best Paper Award.**
Extended paper to appear in *International Journal of High Performance Computing and Networking (IJHPCN)*.
- Sushmita Ruj, Subhamoy Maitra and Bimal Roy. Key Predistribution using Transversal Design on a Grid of Wireless Sensor Network. *Ad Hoc & Sensor Wireless Networks*. Volume 5, Number 3-4, pp 247-264, 2008.
- Sushmita Ruj and Bimal Roy. Key Establishment Algorithms for some Deterministic Key Predistribution Schemes. In *Proceedings of The Sixth Workshop on Security In Information Systems, WOSIS08*, Barcelona, Spain, INSTICC Press, pp 68-77, 2008.
- Sushmita Ruj and Bimal Roy. Key Predistribution Schemes Using Codes in Wireless Sensor Networks. In *Proceedings of the 4th International Conference on Security and Cryptology, INSCRYPT 2008*, Beijing, LNCS 5487, pp 275-288, 2009.

- Sushmita Ruj and Bimal Roy. Key Distribution Schemes Using Combinatorial Designs To Identify All Traitors. *Congressus Numerantium*, Volume 193, pp 195-214, 2008.
- S. B. Rao and Sushmita Ruj. Almost Ramsey Type Theorems for Directed Graphs In the proceedings of the *International Conference on Discrete Mathematics, 2006*, Ramanujan Mathematical Society, Mysore, Volume 7, pp 43-53, 2008.
- Sushmita Ruj and Bimal Roy. Key Predistribution Using Combinatorial Designs for Grid-group Deployment Scheme in Wireless Sensor Networks. *ACM Transaction on Sensor Networks*. Accepted
- Sushmita Ruj and Bimal Roy. Revisiting Key Predistribution using Transversal Designs for a Grid-based Deployment Scheme. *International Journal of Distributed Sensor Networks*. Accepted.
- Sushmita Ruj, Jennifer Seberry and Bimal Roy. Key Predistribution using Block Designs. The 2nd International Workshop on Adaptation in Wireless Sensor Networks (AWSN-09). Accepted.
- Sushmita Ruj and Bimal Roy. More on Combinatorial Batch Codes. Arxiv: CoRR abs/0809.3357: (2008).
- Sushmita Ruj. Almost Ramsey Type Theorems for Directed Graphs MTech Dissertation, Indian Statistical Institute, Kolkata, 2006.

Academic Visits

1. 27th June, 2009 - 15th July, 2009 - AIST, Research Center for Information Security (RCIS) and Kyushu University, Japan.
2. 15th April, 2008 - 14th June, 2008 - Project Secret, INRIA-Rocquencourt, France.
3. 10th March, 2008 - 15th March, 2008 - Department of Computer Science, University of Calgary, Canada.
4. 20th August, 2007 - 28th August, 2007 - School of Information Technology and Engineering, University of Ottawa, Ottawa, Canada.
5. 16th April, 2007 - 10th June, 2007 - School of Computer Science and Software Engineering, University of Wollongong, Wollongong, Australia.

Internship

23rd March, 2009 - 29th May, 2009 - Microsoft Research Lab, India (MSRI),
Bangalore, India.

Personal Details

Sex : Female
Date of Birth : 2nd April, 1982.
Place of Birth : Durgapur, India.
Nationality : Indian.
Address : Applied Statistics Unit, Indian Statistical Institute,
203, B.T. Road, Kolkata 108, INDIA.
E-mail : sush_r@isical.ac.in.
Telephone : +91 33 25752821.