

Pradip De

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OBJECTIVE

Seeking a full-time research and development position in networking and distributed systems.

RESEARCH INTERESTS

- Design of communication protocols for wireless sensor and mesh networks.
 - Mathematical modeling for performance and security analysis of network protocols.
 - Applications of machine learning techniques for optimization and design of communication protocols.
 - Design of RFID enabled smart systems for enhancing supply chain management.
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PROFESSIONAL EXPERIENCE

Research Intern

May '07 - Aug '07

[Sun Microsystems Research Labs](#), Menlo Park, CA.

Secure Ad Hoc Communications Group.

Mentors: Pete. St. Pierre and Vipul Gupta

Analytical formulation, architecture design and implementation of a novel *link quality* and *sensor-node-health* based routing protocol for the [Sun Small Programmable Object Technology devices \(SunSPOTs\)](#). This work has been filed as a patent by Sun Labs entitled "*Method and Apparatus for Mesh Routing Optimized for Stability and System Lifetime Maximization*".

Research Intern

Aug '06 - Dec '06

[Sun Microsystems Research Labs](#), Menlo Park, CA.

Secure Ad Hoc Communications Group.

Mentor: Vipul Gupta.

Design and implementation of a state-of-the-art secure and scalable reprogramming protocol for a network of [Sun Small Programmable Object Technology devices \(SunSPOTs\)](#). The protocol can autonomously propagate new code image throughout the network of SunSPOTs based on local interactions with neighboring SunSPOTs in a secure, scalable and reliable manner.

Assistant Architect Intern

June '05 - Aug '05

[Globeranger Corp](#), Richardson, TX

Mentor: Bryan Tracey.

Design and development of a software modeling tool for the capacity analysis of an RFID enabled warehouse. Queuing theory based mathematical modeling techniques were used to model and compute the capacity of flow of RFID tagged pallets arriving at the dock doors of a warehouse.

Assistant Architect Intern

June '04 - Aug '04

Globeranger Corp, Richardson, TX

Mentor: Bryan Tracey.

Design of a distributed mobility management architecture and location tracking protocol for an RFID based supply chain management system.

Software Engineer

June, '01 – July, '02

Alumnus Software Ltd, Calcutta, India

Networking Group

Design, implementation and testing of an IPv6 Protocol Stack (RFC 2460, 2464, 2472, 2463) for a Network Simulator and Protocol Conformance Testing tool named ANVL(Automated Network Validation Library). ANVL is a data network testing solution that

validates the protocol implementations and operational robustness of networking devices including layer 3 switches, backbone routers and end nodes.

Research Assistant

Aug, '07 - Present

CRewMaN Laboratory

Aug, '02 - Dec, '03

Sensor Networking Research Group

Advisors: Dr. Sajal K. Das and Dr. Yonghe Liu

Teaching Assistant

Jan, '04 – May, '07

(Computer Networks, Programming Languages, Object Oriented Design).

Computer Science and Engineering Department.

University of Texas, Arlington.

EDUCATION

PhD in Computer Science and Engineering, University of Texas at Arlington **Spring '08**. (expected)

Thesis Title: ``Data Dissemination Protocols in Wireless Sensor Networks : Models, Security and Design".

Advisors: Prof. Sajal K. Das and Dr. Yonghe Liu.

MS in Computer Science and Engineering, University of Texas at Arlington **May '04**.

Thesis Title: ``An RFID based Ubiquitous Framework for Mobile Object Tracking".

Advisors: Prof. Sajal K. Das and Prof. Kalyan Basu

BS in Computer Science and Engineering, Haldia Institute of Technology, India **July '01**

Ranked **First** in the class of 2001 among all departments.

PUBLICATIONS

- **Pradip De**, Yonghe Liu, and Sajal K. Das, "ReMo : An Energy efficient Reprogramming Protocol for Mobile Sensor Networks", accepted for publication at *The 6th IEEE International Conference on Pervasive Computing and Communications (PerCom)* 2008.
- **Pradip De**, Yonghe Liu, and Sajal K. Das, "A Prototype for an Energy Efficient Protocol for Reprogramming Mobile Sensor Networks", accepted for demonstration and poster presentation at *The 6th IEEE International Conference on Pervasive Computing and Communications (PerCom)* 2008.
- **Pradip De**, Yonghe Liu, and Sajal K. Das, "On Broadcast Based Communication Protocols in a Pervasive Computing Network", accepted for publication and poster presentation (*Google Sponsored PhD Forum*) at *The 6th IEEE International Conference on Pervasive Computing and Communications (PerCom)* 2008.
- **Pradip De**, Yonghe Liu, and Sajal K. Das, "A Framework for Vulnerability Analysis of Broadcast Protocols in Sensor Networks", accepted for publication in *IEEE Transactions on Mobile Computing (TMC)*, 2008.

- **Pradip De** and Sajal K. Das, "Epidemic Models, Algorithms and Protocols in Wireless Sensor and Ad-hoc Networks", accepted for publication as a book chapter in *Algorithms and Protocols for Wireless Sensor Networks*, published by John Wiley and Sons, 2008.
- **Pradip De**, Yonghe Liu, and Sajal K. Das, "Evaluating Broadcast Protocols in Sensor Networks : An Epidemic Theoretic Framework", poster paper at *The 3rd IEEE International Conference on Distributed Computing and Sensor Systems (DCOSS)* 2007.
- **Pradip De**, Yonghe Liu, and Sajal K. Das, "An Epidemic Theoretic Framework for Evaluating Broadcast Protocols in Wireless Sensor Networks", in proceedings of *The 4th IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS)* 2007.
- **Pradip De**, Yonghe Liu, and Sajal K. Das, "Modeling Node Compromise Spread in Wireless Sensor Networks using Epidemic Theory", in proceedings of *The IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM)* 2006.
- **Pradip De**, Yonghe Liu, and Sajal K. Das, "Deployment Aware Modeling of Node Compromise Spread in Wireless Sensor Networks", under review in *ACM Transactions on Sensor Networks (TOSN)*.
- Wei Zhang, **Pradip De**, Yonghe Liu, and Sajal K. Das, "Secure Data Aggregation in Wireless Sensor Networks : A Watermark Based Authentication Supportive Approach", under review in *Elsevier Pervasive Computing Journal (PMC)*.
- **Pradip De**, Kalyan Basu, and Sajal K. Das, "An RFID based Pervasive Framework for Object Distribution, Tracking and Recall", under review in *Elsevier Pervasive Computing Journal (PMC)*.
- **Pradip De**, Wei Zhang, Yonghe Liu, and Sajal K. Das, "Harnessing Epidemic Theory to Model Malware Propagation in Wireless Sensor Networks", under review in *IEEE Communications Magazine: Special Edition on Security in Mobile Ad Hoc and Sensor Networks*.
- **Pradip De**, Kalyan Basu, and Sajal K. Das, "An Ubiquitous Architectural Framework and Protocol for Object Tracking using RFID tags", in proceedings of *The International Conference on Mobile and Ubiquitous Systems : Networking and Services (MobiQuitous)* 2004.
- **Pradip De**, Kalyan Basu, and Sajal K. Das, "An RFID Based Framework for Object Distribution, Tracking and Recalls in Pervasive Transaction Environments ", in proceedings of *The IEEE International Conference on Mobile Ad Hoc and Sensor Systems (MASS)* 2004.
- Samik Ghosh, **Pradip De**, Kalyan Basu, and Sajal K. Das, "PeterNet : An Emergent Technology Based Radio Access Network Architecture for Next Generation Cellular Wireless Systems", in proceedings of *The International Conference on Broadband Communications, Networks, and Systems (BroadNets)* 2004.

TECHNICAL SKILLS

- **Programming Languages:** Java, C/C++, Perl, NesC (familiar).
- **Tools:** NetBeans, MATLAB, NS-2 Simulator, JProWler, GlomoSim.
- **Platforms:** Linux, Windows, Mac, Solaris.

AWARDS AND AFFILIATIONS

- The **Dean's Doctoral Fellowship** Award, The University of Texas at Arlington: **Fall 2004 - Present**.
- Texas Telecommunication Consortium (TxTEC) Scholarship: **Fall 2003 – Fall 2006**.
- Outstanding Student Volunteer Award at **IEEE Percom 2005**.
- Student Travel Grant Award for participation at **IEEE Percom 2005**.

- **Nokia** Telecommunication Scholarship Award, **Spring 2004**.
 - The **University Gold Medal** for ranking **first** in the class of 2001 among all B.Tech departments at Haldia Institute of Technology, India.
 - Reviewer of IEEE and ACM conferences and journals.
 - Student Member, **IEEE Computer Society**.
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REFERENCES

Available upon request