

Subrata Acharya

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RESEARCH INTERESTS

My research interests are in **Networks**, **Security** and **Distributed Systems**. In general looking forward to a challenging career in Computer Systems.

EDUCATION

University of Pittsburgh, Pittsburgh, PA August 2004 - Present

Doctoral Candidate in Computer Science, Major: Network Security

GPA 3.80/4.00 (Expected graduation: August, 2008)

Thesis title: Dynamic Traffic Driven Architectures and Algorithms for Securing Networks

Thesis committee: **Prof. Taieb Znati**, **Prof. Rami Melhem**, **Prof. Alexandros Labrinidis**, **Dr. Albert Greenberg**, **Prof. Ehab S. Al-Shaer**

Texas A&M University, College Station, TX August 2002 – December 2004

M.S. in Computer Sc., Major: Embedded Systems (Computer Engineering)

GPA 3.90/4.00

Thesis title: A Dynamic Slack Management Technique for Real-Time Distributed Embedded Systems

Thesis committee: **Prof. R. N. Mahapatra**, **Prof. E. J. Kim**, **Prof. K. R. Narayanan**, **Prof. Valerie E. Taylor**

University College of Engineering, Burla, India August 1997 – July 2001

B.Engg.(Hons), Computer Science and Engineering

GPA 4.00/4.00

Final B.E. Project: Software Reliability Prediction Using Artificial Neural Networks

Advisor: **Prof. C. R. Tripathy**

CURRENT RESEARCH EXPERIENCE

- *Formal Languages for Firewall Optimization*, as part of research project on Accelerating Firewalls, Department of Computer Science, University of Pittsburgh, PA, December 2007 – present
- *Global Defense Architecture for Limiting Distributed Denial of Service Attacks*, as part of research project on Dynamic Collaborative Defense Model for Enterprise Networks, University of Pittsburgh, April 2007 – present.
- *Centralized and Hierarchical Firewall Optimization*, joint work with AT&T Research Labs, Florham Park, NJ, September 2005 – August 2007.

SELECTED PUBLICATIONS

PATENTS

- S. Acharya, J. Wang, Z. Ge and A. Greenberg, “*Methods and Apparatus for Optimizing a Firewall*”, US patent pending, June 2006.

REFERRED JOURNALS

- S. Acharya, B. Mills, M. Ablitz, A. Ferrari, T. Znati, A. Greenberg, “Architectures and Algorithms to aid De-centralized Firewall Optimization”, submitted to the ACM/IEEE Transactions on Networking, December, 2007
- S. Acharya, R. N. Mahapatra, “*A Dynamic Slack Management Technique for Real-Time Distributed Embedded System*”, IEEE Transactions on Computers, 2006.

- Pramod K., S. Acharya, R. N. Mahapatra, “*A Partitioning Algorithm for Power constrained Reconfigurable Real-Time Systems*”, Journal of Microprocessor and Microsystems, 2005.

CONFERENCES

- S. Acharya, T. Znati, “Efficient Splitting Techniques for Optimizing Decentralized Firewalls”, under submission, December, 2007
- S. Acharya, M. Ablitz, B. Mills, T. Znati, J. Wang, Z. Ge, A. Greenberg, “*OPTWALL: A Traffic-Aware Hierarchical Firewall Optimization*”, Proceedings of the Network and Distributed Systems Symposium, 2007.
- S. Acharya, J. Wang, Z. Ge, A. Greenberg, T. Znati, “*Traffic Aware Firewall Optimization Strategies*”, in the IEEE International Conference on Communications, Istanbul, Turkey, June, 2006.
- S. Acharya, J. Wang, Z. Ge, A. Greenberg, T. Znati, “*Simulation Study of Firewalls to Improve Performance*”, 39th Annual Simulation Symposium, Alabama, April, 2006.
- S. Acharya and J. Wang and Z. Ge and T. Znati and A. Greenberg, “*A Traffic Aware Framework and Optimization Strategy for Large Scale Enterprise Networks*”, Technical Report, Computer Science Department, University of Pittsburgh, Pittsburgh, PA, Sept, 2005.

ACADEMIC RESEARCH AND TEACHING EXPERIENCE

- *Research Fellow*, Department of Computer Science, University of Pittsburgh, September 2007 – present
- *Teaching Fellow (Instructor)*, Social Implications of Computing Technology, CS 1590, May 2007 – August 2007
- *Teaching Assistant*, Cryptography and Network Security and Social Implications of Computer Science, January 2007 – May 2007.
- *Teaching Assistant*, Intermediate programming with Java and Social Implications of Computer Science, September 2006 – December 2006.
- *Teaching Fellow (Instructor)*, Teaching Languages Institute (TLI) program for Minority African Americans, May 2006 – July 2006.
- *Graduate Research Assistant*, working on Firewall Optimization, Joint project with AT&T Research Labs, NJ, January 2006 – August 2006.
- *Teaching Assistant*, Graduate Wide Area Networks, September 2005 – December 2005.
- *Teaching Assistant*, Operating Systems for Undergraduates at University of Pittsburgh, September 2004 – December 2004.
- *Teaching Assistant*, Computer Architecture (MIPS Assembly, Verilog) for Undergraduates at TAMU, August 2002 – August 2004.
- *Graduate Research Assistant*, Computer Science Department - Texas A&M University, under the guidance of Professor R. N. Mahapatra, working in the field of real-time scheduling and power aware System on Chip design, August 2002 – August 2004.
- *Seminar director*, Conducted a series of seminars on Network protocol design and real time

operations during Undergraduate study, January 2000 – May 2001.

INDUSTRIAL RESEARCH EXPERIENCE

- *Research Manager*, AT&T Research Labs, NJ, May 2005 – Aug 2005.
- *Summer Intern*, Texas Instruments, Bangalore, India, May 2001 – Dec 2001.
- *Summer Intern*, Hindustan Aeronautics Limited, Bangalore, India, May 2000 – Aug 2000.
- *Summer Intern*, Tata Consultancy Services, Calcutta, India, May 1999 – August 1999.

PAST RESEARCH EXPERIENCE

- *Automatic Stress Testing for BGP implementation*, with Dr. Hui Zhang, Carnegie Mellon University, September 2004 – May 2005.
- *Networks on Chip design*, a joint project work with IBM Research Lab, Austin, working with Dr. T. Chen, May 2003 - December 2003.
- *Trust Management Model for the design of Wireless Adhoc Networks for Secure-CITI project*, University of Pittsburgh, September 2004 - May 2005.
- *Implementation of cluster based ad-hoc networking environment for low Power devices*, Secure-CITI Project, University of Pittsburgh, September 2004 – May 2005.
- *Provide efficient search methods for pattern matching using TCAM cells*, TAMU, May 04 – Aug 04.
- *Master's Thesis: A Dynamic Slack Management Technique for Real-Time Distributed Embedded System*, TAMU, September 2003 – August 2004.
- *An Adaptive Branch History Guided Prefetching Scheme*, TAMU, January 2004 – May 2004.
- *Maintaining Peak-Power Constraints with Energy Efficient Scheduling in Distributed Real-Time Embedded Systems*, TAMU, September 2003 – December 2003.
- *Delay and Power Analysis and Implementation on Network On Chip*, TAMU, May 03 – Dec 03.
- *Dynamic Memory Management for Real-Time Applications on SoCs*, TAMU, September 2003 – December 2003.
- *Dynamic Scheduling of Traffic for Improvement in Power Performance Characteristics*, TAMU, Jan 03 – May 03.
- *iSCSI Performance Measurement*, TAMU, January 2003 – May 2003.
- *Design of a Real Time Scheduler*, TAMU, September 2002 – December 2002.
- *IP Address to Geographical location mapping tool*, TAMU, September 2002 – December 2002.
- *Software Reliability Prediction Using Artificial Neural Networks*, UCE Burla, Jan 01 –April 01.

SELECTED AWARDS AND ACHIEVEMENTS

- People choice poster award, Annual CS Day competition, University of Pittsburgh, 2007.
- Best research award, Annual CS DAY, University of Pittsburgh, 2007.
- Selected to participate in the CRA-W Workshop, 2005, 2006, 2007.

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- Selected to participate in 1st Google Workshop for Women Engineers, California, 2006.
 - Best Incoming Doctoral Student Fellowship, Department of Computer Science, University of Pittsburgh, 2004 - 2005.
 - Outstanding AHF Fellowship, Department of Computer Science, TAMU, 03 - 04.
 - Secured 92 percentile in English Proficiency Examination, Texas A&M University, 2003.
 - Ranked 1st amongst all undergraduates (1200), University College of Engineering, Burla, India, 97- 01.
 - Talent Scholar, National Talent Search Examination, India, 1995 - 1997.
 - 21st rank in national level amongst 50,000 students in Higher Secondary Examination, India, June 1997

COMPUTER SKILLS

- Operating Systems
Unix, Linux, Windows, Embedded Linux
- Languages
C, C++, Visual Basic, Java, SQL, SystemC, Verilog, VHDL, Perl, Awk, Unix shell scripting
- Hardware Skills:
Synopsis CoCentric Tool, Xilinx FPGA programming, Xtensa (Tensilica), Verilog/VHDL Design, Assembly Language Programming (i8085, i8086), Analog Digital Systems (Design & Measurement), LabView.
- Architecture:
Intel x86 family, ARM, PowerPC.
- Tools:
CVS, make, gdb, ddd, LaTeX
- Simulation tools:
CSIM, NS, Matlab

PROFESSIONAL ACTIVITIES

- External reviewer for the following conferences: ACM Sigcomm (05, 06, 07), IEEE Infocom (05, 06, 07), NDSS (06, 07), DAC (02, 03), RTSS (02, 03), DATE (02, 03).
- External reviewer for the following journals: IEEE-TC, IEEE-IPDPS, IEEE-ToN.
- Member IEEE, ACM and Grace Hopper Women in Computing, CRA-W.

EXTRA CURRICULUM ACTIVITIES

- Organizer of Network and Security seminar, University of Pittsburgh, 2005-07.
- Organized workshops for mentoring fellow students at Univ. of Pittsburgh, 05-07.
- Student representative in the CS Day committee, University of Pittsburgh, 2007.
- President of Student Organization, Undergraduate University, 1999-2001.

REFERECES

- Prof. Taieb Znati, NSF Division Director, CNS Division and Professor Department of Computer Science, University of Pittsburgh, PA, contact: znati@cs.pitt.edu, tznati@nsf.gov, 703-292-8950
- Dr. Albert Greenberg, Principal Researcher, Microsoft Research, Redmond, WA, contact: albert@microsoft.com, 800-642-7676
- Prof. Rami Melhem, Professor and Head of Department, Computer Science, University of Pittsburgh, PA, contact: melhem@cs.pitt.edu, 412-624-8493
- Prof. Ehab Al-Shaear, Professor of Computer Science, Depaul University, Chicago, contact: ehab@cs.depaul.edu, 312-362-5137
- Prof. Alexandros Labrinidis, Assistant Professor, Department of Computer Science, University of Pittsburgh, PA, contact: labrinid@cs.pitt.edu, 412-624-8843