

Roman Chertov

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- EDUCATION**
- Purdue University**
- Ph.D. in Computer Science, May 2008. Thesis project: *A Device Independent Router Model: From Measurements to Simulations*, under Sonia Fahmy and Ness B. Shroff
 - Master of Science in Computer Science, Spring 2004
- University of Maryland at College Park**
- Bachelor of Science in Computer Science, Spring 2002
 - Bachelor of Arts in Economics, Spring 2002
- RESEARCH INTERESTS**
- High fidelity emulation and simulation, satellite link modeling, networking, and network measurements
- HONORS**
- Graduate Assistance in Areas of National Need (GAANN) Fellowship, January 2007 – present
First place poster at CERIAS 2006 Symposium, “Automation and Realistic Topology Generation for Routing Experiments”
Upsilon Pi Epsilon member
Graduated with departmental honours in computer science from Univ. of Maryland
- PROFESSIONAL ACTIVITIES**
- Officer of the Purdue University Graduate Student Board (2006–2008)
IEEE member since 2005
- SKILLS**
- C/C++, Perl, LaTeX, Visual Basic, Java, ML, Lisp, x86 assembly
Emulated networks, IPv4/IPv6 networking, concurrent programming, Linux kernel/device programming, cross-platform embedded Linux development, OpenGL graphics programming, ns-2 Simulator, Cisco IOS, MATLAB, Zebra/Quagga open source routing platform
Linux/UNIX, Windows XP/2000/NT
Fluent spoken/written English, Russian
- WORK EXPERIENCE**
- Computer Scientist**, Kelly Technology Group (July 2009–present)
- Patent analysis for litigation cases related computer technology
 - Infringement/non-infringement expert witness reports
- Visiting Researcher**, University of California, Santa Barbara (May 2008–present)
- Provided technical assistance to graduate students in the Networking and Multimedia Systems Lab (NMSL)
 - Wrote conference papers relating to satellite IP networking and wireless research
- Senior Research Scientist**, Santa Barbara Labs, LLC (May 2008–May 2009)

- Conducted satellite network studies, which resulted in white paper deliverables for the Air Force's TSAT Mission Operations System (TMOS) project
- Created a satellite payload emulator capable of supporting multiple antennas, frequency sub-channels, and seamless IP transitions between antennas and sub-channels
- Created a high-fidelity emulated testbed for researching mobile IPv6 satellite networks
- Created layer 2 emulation tools to mimic satellite link behavior
- Directed, supervised, and presented team research projects
- Contributed to the Click modular router open source project and developed network card Linux drivers

Research Assistant, Purdue University (Spring 2004–present)

- Explored differences between simulation and emulation to create higher fidelity simulation router models
- Created a network emulation tool based on the ns-2 simulator, designed for conducting router measurements and traffic generation
- Created a set of tools to aid experiment automation on large testbeds like Emulab and DETER as part of the EMIST project
- Data analysis of large packet captures
- Reviewed papers for conferences (ICNP, INFOCOM, IWQoS, WWIC, ICDCS)
- Reviewed papers for journals (TDSC, JPDC)

Summer Intern, Information Science Institute (Summer 2005)

- Benchmarked the maximum networking performance of DETER nodes
- Compared performance of the Click modular router with my own Linux bridge modifications to create a software link monitor

PUBLICATIONS

Refereed Conferences and Workshops

- **Roman Chertov**, Daniel Havey, and Kevin Almeroth, "MSET: A Mobility Satellite Emulation Testbed," *In Proceedings of IEEE INFOCOM (the conference on computer communications)*, March 2010 (to appear).
- Daniel Havey, **Roman Chertov**, and Kevin Almeroth, "Wired Wireless Broadcast Emulation", *In Proceedings of the 5th International workshop on Wireless Network Measurements (WiNMee)*, June 2009
- **Roman Chertov** and Kevin Almeroth, "High-Fidelity Link Shaping," *In Proceedings of 5th International IEEE/CreateNet Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom)*, April 2009.
- Daniel Havey, Elliot Barlas, **Roman Chertov**, Kevin Almeroth, and Elizabeth Belding, "A Satellite Mobility Model for QUALNET Network Simulations", *In Proceedings of MILCOM*, November 2008
- **Roman Chertov**, Sonia Fahmy, and Ness B. Shroff, "A Device-Independent Router Model," *In Proceedings of IEEE INFOCOM (the conference on computer communications)*, April 2008.
- **Roman Chertov**, Sonia Fahmy, and Ness B. Shroff, "A Black-box Router Profiler," *In Proceedings of the IEEE Global Internet Symposium (GI)*, May 2007.
- J. Mirkovic, S. Wei, A. Hussain, B. Wilson, R. Thomas, S. Schwab, S. Fahmy, **R. Chertov**, P. Reiher, "DDoS Benchmarks and Experimenter's Workbench for the DETER testbed," *In Proceedings of 3rd International IEEE/CreateNet Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom)*, May 2007.

- **Roman Chertov** and Sonia Fahmy, “Optimistic Load Balancing in a Distributed Virtual Environment,” *In Proceedings of the 16th ACM International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV)*, pp. 74-79, May 2006.
- **Roman Chertov**, Sonia Fahmy, and Ness B. Shroff, “Emulation versus Simulation: A Case Study of TCP-Targeted Denial of Service Attacks,” *In Proceedings of 2nd International IEEE/CreateNet Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom)*, March 2006.

Refereed Journals

- **Roman Chertov** and Kevin Almeroth, “Qualitative Comparison of Link Shaping Techniques”, *International Journal of Communication Networks and Distributed Systems (IJCNDS)*, (to appear).
- **Roman Chertov**, Sonia Fahmy, and Ness B. Shroff, “Fidelity of Network Simulation and Emulation: A Case Study of TCP-Targeted Denial of Service Attacks”, *Transactions on Modeling and Computer Simulation (TOMACS)*, December 2008.

Technical Reports

- **Roman Chertov**, “Performance of a Software Link Monitor”, *Information Science Institute*, 2006
- **Roman Chertov** and Sonia Fahmy, “Design and Validation of a Software Link Monitor”, *Purdue University*, 2006

CONFERENCE
WORKSHOP
PRESENTATIONS

IEEE INFOCOM, Phoenix, April 2008
IEEE GI, Anchorage, May 2007
DETER Workshop, Arlington, June 2006
ACM NOSSDAV, New Port, May 2006
IEEE TridentCom, (Barcelona, March 2006), (Fairfax, April 2009)

SOFTWARE

Mobility Satellite Emulation Testbed (MSET), a highly modular emulation framework used to study mobility effects (line of sight blockages, beam and satellite handovers) in satellite networks. The satellite link emulation component was delivered to Lockheed Martin.

Black Box Profiler, a traffic generation/measurement system based on ns-2 simulator, modified Linux network driver, and Click modular router. The system is capable of creating arbitrary traffic flow scenarios with multiple unique IPs, as well as measuring packet loss, corruption, and delay with microsecond precision. The tool is planned to be released in early 2008.

EMIST Tool Suite, a collection of tools designed to control, measure, and analyze experiments on testbeds. The tools can be downloaded at <http://www.cs.purdue.edu/homes/fahmy/software/emist/>

TEACHING
EXPERIENCE

Current co-advised students at University of California, Santa Barbara (May 2008–present)

- PhD: Daniel Havey
- MS: Camilla Fiorese

Teaching Assistant, Purdue University (Fall 2002–Fall 2003), Undergraduate Operating Systems

- Always received good evaluations for good explanations and project help
- Held weekly classes for 10–20 students to explain class project assignments
- Held weekly office hours to answer questions and help with debugging
- Designed projects and specification documents for the students
- Created a preemptive threading UNIX package for an OS scheduler project

REFERENCES

Available upon request