Rob G. Jansen

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Education

University of Minnesota, Minneapolis, MN

Ph.D., Computer Science — *October 2012*
Dissertation: *Privacy Preserving Performance Enhancements for Anonymous Communication Networks*
Advisor: Nicholas Hopper

M.S., Computer Science — *January 2011*

University of Minnesota, Morris, MN

B.A., Computer Science, with distinction — *May 2008*
Mathematics Minor

Research

My research interests lie in distributed systems and protocol security, network security, anonymity, and privacy. Analyzing proposed distributed systems reveals design techniques and primitives that do and do not work well when designing system architectures. Since theoretically secure systems that are hard to use or have high performance costs will not be practically accepted, I prefer to explore software and systems that provide practical and usable security.

U.S. Naval Research Laboratory, Washington, DC

Computer Scientist — *June 2011–present*

- Research anonymous communication and Tor: The Onion Router
- Continue development of the Shadow Simulator (http://shadow.github.io)
- Report and publish research results, explore research funding opportunities

University of Minnesota, Minneapolis, MN

Graduate Research Assistant — *Fall 2008–June 2011*

- Distributed systems security lab
- Analyze published research literature and systems, search for vulnerabilities
- Design and develop new approaches and techniques that improve security and utility of practical systems
- Perform experiments and compose results

Massachusetts Institute of Technology – Lincoln Laboratory, Lexington, MA

Summer Research Program Intern — *Summer 2010*

- Conducted threat and security analysis of a satellite-based system
- Researched trusted computing technologies for allowing remote attestation of trust in satellite terminals

BBN Technologies, Cambridge, MA

Network Research Graduate Intern *Summer 2009*

- Collaborated with BBN scientists and engineers
- Ensured new security mechanisms could be seamlessly integrated into a Delay Tolerant Network Bundle Protocol implementation
- Integrated current anonymity technologies into a Delay Tolerant Network environment while creating a usable system with adjustable performance vs. security mechanisms
- Independently performed simulations, analyzed data, and produced results

University of Minnesota, Morris, MN

Morris Academic Partnership *Fall 2006–Spring 2007*

- Competitive one year undergraduate research grant
- Co-authored grant proposal
- Studied parallel scheduling algorithms and the effects of limiting the number of processors available to these algorithms
- Published and presented at the Midwest Instruction and Computing Symposium, University of North Dakota, April 2007

University of South Carolina, Columbia, SC

Research Experience for Undergraduates *Summer 2006*

- Researched software development processes
- Analyzed development methodologies used at the University of South Carolina
- Recommended curriculum improvements, particularly for small group projects
- Engineered a cell phone game in a small group, gaining first-hand insights and methodological experience
- Wrote and presented a report "Small Group Software Development: A Case Study" as a program deliverable

Publications

Peer-reviewed Conferences

- **Rob Jansen**, Florian Tschorsch, Aaron Johnson, and Björn Scheuermann. The Sniper Attack: Anonymously Deanonymizing and Disabling the Tor Network. In *NDSS'14: Proceedings of the 21st Symposium on Network and Distributed System Security*, 2014.
- Aaron Johnson, Chris Wacek, **Rob Jansen**, Micah Sherr, and Paul Syverson. Users Get Routed: Traffic Correlation on Tor by Realistic Adversaries. In *CCS'13: Proceedings of the 20th ACM Conference on Computer and Communications Security*, 2013.
- John Geddes, **Rob Jansen**, and Nicholas Hopper. How Low Can You Go: Balancing Performance with Anonymity in Tor. In *PETS'13: Proceedings of the 13th Privacy Enhancing Technologies Symposium*, 2013. **Best Student Paper Award!**
- **Rob Jansen**, Aaron Johnson, and Paul Syverson. LIRA: Lightweight Incentivized Routing for Anonymity. In *NDSS'13: Proceedings of the 20th Symposium on Network and Distributed System Security*, 2013.
- **Rob Jansen**, Paul Syverson, and Nicholas Hopper. Throttling Tor Bandwidth Parasites. In *SEC'12: Proceedings of the 21st Usenix Security Symposium*, 2012.

- **Rob Jansen**, Kevin Bauer, Nicholas Hopper, and Roger Dingledine. Methodically Modeling the Tor Network. In *CSET'12: Proceedings of the 5th Workshop on Cyber Security Experimentation and Test*, 2012.
- **Rob Jansen** and Nicholas Hopper. Shadow: Running Tor in a Box for Accurate and Efficient Experimentation. In *NDSS'12: Proceedings of the 19th Symposium on Network and Distributed System Security*, 2012. **2013 PET Award Runner Up!**
- **Rob Jansen** and Rob Beverly. Toward Delay Tolerant Network Anonymity: Threshold Pivot Scheme. In *MILCOM'10: Proceedings of the 29th Military Communications Conference*, 2010.
- **Rob Jansen**, Nicholas Hopper and Yongdae Kim. Recruiting New Tor Relays with BRAIDS. In *CCS'10: Proceedings of the 17th ACM Conference on Computer and Communications Security*, 2010.
- Eugene Vasserman, **Rob Jansen**, James Tyra, Nicholas Hopper, and Yongdae Kim. Membership-concealing overlay networks. In *CCS'09: Proceedings of the 16th ACM Conference on Computer and Communications Security*, 2009.

Other Technical Reports

- **Rob Jansen**, Paul Syverson, and Nicholas Hopper. Throttling Tor Bandwidth Parasites. In *NDSS'12: Symposium on Network and Distributed System Security*, Chair's invited session, 2012.
- **Rob Jansen** and Nicholas Hopper. Shadow: Running Tor in a Box for Accurate and Efficient Experimentation. *University of Minnesota Technical Report TR-11-020*, 2011.
- **Rob Jansen**, Paul Syverson, and Nicholas Hopper. Throttling Tor Bandwidth Parasites. *University of Minnesota Technical Report TR-11-019*, 2011.
- **Rob Jansen** and Rob Beverly. Toward Delay Tolerant Network Anonymity: Threshold Pivot Scheme. *BBN Technical Report 8513*, 2009.

Invited Talks

Department of Computer and Information Sciences, Kansas State University, Manhattan, KS
"Shadow: Simple HPC for Systems Security Research" *2013-09-25*

Symposium on Network and Distributed System Security (NDSS), San Diego, CA
"Throttling Tor Bandwidth Parasites" *2012-02-06*

U.S. Naval Research Laboratory, Washington, DC
"Exploring Delay Tolerent Network Anonymity" *2011-03-15*

Reviews

Program Committees

- Workshop on Privacy in the Electronic Society (WPES) 2013
- Workshop on Cyber Security Experimentation and Test (CSET) 2013

External peer-reviews

- USENIX Security Symposium 2013
- IEEE Symposium on Security and Privacy (S&P) 2013
- European Symposium on Research in Computer Security (ESORICS) 2013
- Transactions on Dependable and Secure Computing (TDSC) 2012

- Conference on Computer and Communication Security (CCS) 2012
- Symposium on Information, Computer and Communications Security (AsiaCCS) 2012
- Transactions on Information and System Security (TISSEC) 2012
- Network and Distributed System Security Symposium (NDSS) 2012
- International Conference on Security and Privacy in Communication Networks (SecureComm) 2011
- Workshop on Privacy in the Electronic Society (WPES) 2011
- Workshop on Free and Open Communications on the Internet (FOCI) 2011
- European Symposium on Research in Computer Security (ESORICS) 2011
- International Conference on Distributed Computing Systems (ICDCS) 2011
- Network and Distributed System Security Symposium (NDSS) 2011
- Information Security Conference (ISC) 2010
- International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc) 2010
- IEEE Wireless Communications Magazine (WCM): Security and Privacy in Emerging Wireless Networks 2010
- International Conference on Distributed Computing Systems (ICDCS) 2010
- Financial Cryptography (FC) 2009

Teaching

University of Minnesota, Minneapolis, MN

Completed Graduate Seminar, GRAD 8101 "Teaching in Higher Education" *2011*

- Participated in semester long graduate seminar class
- Discussed many active learning strategies
- Co-led 50 minute session on human and artificial intelligence
- Designed a semester-long Data Structures course, including syllabus and assessments

Guest Lecturer, SENG 5199 "Data and Network Security: Theory and Practice" *2011*

- Taught 3 hour class introducing anonymity to M.S. Software Engineering students
- Engaged students with group activities and interactive lecture content
- Facilitated discussion of recent security events in the news

Student Co-instructor, Computer Science Education Week *2010*

- Led HTML/Javascript programming lab for interested students

Teaching Assistant, CSCI 3081h "Honors: Program Design and Development" *Fall 2008*

- Led two student lab sections of ~30 students each
- Designed and administered new lab assignments
- Graded homework and lab assignments
- Provided student support through office hours, appointments, and email

University of Minnesota, Morris, MN

Teaching Assistant, CSCI 2101 "Introduction to Data Structures" *Fall 2005 – Spring 2006*

- Assisted laboratory activities for ~25 students
- Graded homework and lab assignments
- Provided student support through office hours, appointments, and email

Professional

Provell Inc, Minneapolis, MN

IT Web Development Intern *Summer 2008*

- Designed, developed, and tested an AJAX-based PHP customer service application interfacing with Oracle DB (currently deployed at Provell)
- Collaborated with several employees in multiple departments to ensure the application fulfilled customer and database specifications

IBM, Rochester, MN

Pre-Professional Programmer *Summer – Fall 2007*

- Progressed development of a SWT graphics rendering plug-in for eclipse as part of the existing AIUML toolkit, which allows users to graphically build an application in an abstract markup and render it in multiple environments
- Designed and developed production code for the new Java Server Faces web renderer
- Presented our work to numerous managers and potential customers

University of Minnesota, Morris, MN

Student Technology Consultant *Fall 2004 – Summer 2005, Summer 2006*

- Installed, configured, and supported computer software and hardware
- Directed the phone help line and provided technical support and troubleshooting

Technical Skills

Systems programming and languages

- Unix/Linux; Unix sockets; POSIX/SYSV Shared Memory; POSIX Threads;
- C/C++; Java; Python; PHP; XML; HTML; JavaScript;

Tools and principles

- Eclipse; GDB; Valgrind; SVN; Git; Trac;
- LaTeX; Inkscape; GIMP;
- Object-oriented design; test-driven development; pair programming;

Honors and Awards

Funding awards

- NRL Karles Fellowship: ”Performance Attacks on Communication Systems” (NRL 2013-2015)

Research awards

- Best student paper award: ”How Low Can You Go: Balancing Performance with Anonymity in Tor” (PETS 2013)
- 2013 PET Award Runner Up: ”Shadow: Running Tor in a Box for Accurate and Efficient Experimentation” (NDSS 2012)

University of Minnesota, Morris, MN

Merit-based awards *2004 – 2008*

- Scholar of the College (one of 35 out of 1800)
- McCree Scholarship for Academic Excellence
- Presidential Scholarship
- Chancellor Scholarship

Dean's List

IBM, Rochester, MN

First-time invention submitter *2007*

- Co-authored new U.S. patent application "Granting server/workstation access using a telephone system"
- Submitted to IBM Intellectual Property Law, currently under review