Nick Feamster

Associate Professor

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EDUCATIONAL BACKGROUND

Degree	Year	University	Field
Ph.D.	2005	Massachusetts Institute of Technology Cambridge, MA *Dissertation:* Proactive Techniques for Correct and Predictable Internet Routing *Sprowls Honorable Mention for best MIT Ph.D. dissertation in Computer Science* *Advisor:* Hari Balakrishnan Minor in Game Theory	Computer Science
M.Eng.	2001	Massachusetts Institute of Technology Cambridge, MA *Dissertation:* Adaptive Delivery of Real-Time Streaming Video *Advisor:* Hari Balakrishnan *William A. Martin Memorial Thesis Award* (MIT M.Eng. thesis award)	Computer Science
S.B.	2000	Massachusetts Institute of Technology Cambridge, MA	Electrical Engineering and Computer Science

EMPLOYMENT HISTORY

Title	Organization	Years
Associate Professor	Georgia Institute of Technology	*March 2011–Present*
Associate Professor	University of Maryland College Park	*August 2012–December 2012*
Assistant Professor	Georgia Institute of Technology	*2006–2011*
Postdoctoral Research Staff	Princeton University	*Fall 2005*
Research Assistant	Massachusetts Institute of Technology	*2000–2005*
Intern/Consultant	AT&T Labs–Research	*2001–2005*
Technical Associate	Bell Laboratories	*1999*
Intern	Hewlett-Packard Laboratories	*1999*
Technical Staff	LookSmart, Ltd.	*1997*

CURRENT FIELDS OF INTEREST

My research focuses on networked computer systems, with a strong emphasis on network architecture and protocol design; network security, management, and measurement; routing; and anti-censorship techniques. The primary goal of my research is to help network operators run their networks better, and to enable users of these networks (both public and private) to experience high availability and good end-to-end performance. I have a strong interest in tackling practical problems using a "first principles" approach, designing systems based on these principles, and implementing and deploying these systems in practice.

I. TEACHING

A. Courses Taught

Term	Year	Number of Course Number & Title	Students	Comments
Summer	2013	Software Defined Networking (Coursera)	33,000	
Spring	2013	CS 3251 Computer Networking	82	
Fall	2012	CMSC 330 Programming Languages	100	
Fall	2011	CS 6250 Computer Networking	51	
Fall	2011	CS 4235 Computer Security	44	
Fall	2010	CS 6250 Computer Networking	92	
Spring	2010	CS 3251 Computer Networking I	53	
Spring	2010	CS 8803 NGN Next Generation Networking	50	New Course
Fall	2009	CS 7001 Introduction to Graduate Studies	39	
Spring	2009	CS 6262 Network Security	45	Updated Syllabus
Fall	2008	CS 4251 Computer Networking II	16	
Fall	2008	CS 7001 Introduction to Graduate Studies	44	
Spring	2008	CS 4251 Computer Networking II	14	New Syllabus
Fall	2007	CS 7001 Introduction to Graduate Studies	53	
Spring	2007	CS 7260 Internetworking Protocols and Architectures	29	
Fall	2006	CS 7001 Introduction to Graduate Studies	74	New Syllabus
Fall	2006	CS 8001 Networking Research Seminar	30	New Syllabus
Fall	2006	CS 1100 Freshman Leap Seminar	15	
Spring	2006	CS 7260 Internetworking Protocols and Architectures	27	New Syllabus

Tutorial on network measurement at African Network Operators Group (AfNOG) in Summer 2013.
Guest lecture on Internet censorship in Georgia Tech CS 4001 in October 2011.
Tutorial on software-defined networking at African Network Operators Group (AfNOG) in Summer 2011.
Tutorials on BGP Multiplexer at GENI Experimenters Workshop and
GENI Engineering Conference in Summer 2010.
Tutorial on network security at African Network Operators Group (AfNOG) in Summer 2010.
Tutorial on Internet routing at Simposio Brasileiro de Redes de Computadores (SBRC) in Summer 2008.
Lecture for DIMACS Tutorial on Next-Generation Internet Routing Algorithms in August 2007.
Guest lecture for CS 6250 (Advanced Computer Networks) in Fall 2007.
Guest lecture for CS 3251 (Computer Networks I) in Fall 2006.
Multiple guest lectures for CS 4251 (Computer Networks II) in Spring 2006.
Guest lecture for MIT Course 6.829 (Computer Networking) in Fall 2005.

B. Curriculum Development

Coursera and Online Masters Program Development: I have developed an online Coursera course for the topic of Software Defined Networking (SDN), an emerging topic in computer networking that is reshaping how networks are defined. In the course, students learn about the history of SDN and develop hands-on experience with tools to develop technologies and applications for SDN. The course currently has 33,000 students enrolled. In addition to the Coursera course I have developed, I also served on the committee to develop a Master of Science in Computer Science degree based on Massive Open Online Course (MOOC) offerings.

CS 6250 Graduate Computer Networking: I redesigned the graduate computer networking course to focus more on current technologies and hands-on assignments. Conventional networking courses treat today's protocols and mechanisms as fixed artifacts, rather than as part of a continually evolving system. To prepare students to think critically about Internet architecture, Jennifer Rexford and I created a graduate networking course that combines "clean slate" networking research with hands-on experience in analyzing, building, and extending real networks. My goal was to prepare students to create and explore new architectural ideas, while teaching them the platforms and tools needed to evaluate their designs in practice. The course, with offerings at both Georgia Tech and Princeton, focuses on network management as a concrete way to explore different ways to split functionality across the end hosts, network elements, and management systems. I have refined the course in Fall 2011 to include more hands-on assignments ad refactored the course around networking problems in different types of networks: transit networks, home networks, content hosting networks, and mobile and wireless networks. Our work on the course received the best paper at the *ACM SIGCOMM Workshop on Networking Education (NetEd)* in 2011.

CS 8803 Next-Generation Networking: I have developed a new graduate course that gives students practical experience with a variety of tools for next-generation networking, ranging from the Click software router to the OpenFlow switch framework. The course also teaches students about the state of the art in networking research—students read papers about research and industry trends and do a course project that incorporates aspects of these new technologies. This course relates to the larger nationwide effort on Global Environment for Network Innovations (GENI), which is building infrastructure for researchers to provide the next generation of networking protocols and technologies.

CS 7001 Introduction to Graduate Studies: With Professor Alex Gray, I have developed a new course syllabus and structure to CS 7001 around the larger goal of introducing new students to *how to do great research* as soon as their first term at Georgia Tech. In contrast with previous terms, where CS 7001 consisted of faculty "advertisements" for their research and projects consisted of short "mini-projects" where little research could be accomplished in a short time span of 3 weeks, we have improved the syllabus by bringing in faculty members to talk about research philosophy, exciting new directions, etc. We have also given the students the option to do a research project that is a term-long project in conjunction with CS 8903; our goal is to give students the flexibility to select meaningful research problems based on their research assistantships while helping them learn the skills required for writing papers, finding and evaluating research ideas, and performing other tasks associated with doing great research. Alex Gray and I wrote a conference paper on our development of this course, which appeared at *ACM SIGCSE 2008*. We are in the process of developing a Web site for the course, `greatresearch.org`, which will make the material generally available for use at other universities.

College of Computing Research Day and Seminar Series: In addition to the course itself, to fulfill some of the functions of the former 7001 course, Alex Gray and I financed and organized a college-wide seminar series and research day in Fall 2009 and again in Spring 2011. Throughout the term, faculty speakers from across the college gave one-hour talks about their research; we raised money from Yahoo to support this event. The research day brings together students and faculty from around the college to see talks, demonstrations, and posters from around the college to exchange ideas.

CS 4251 Computer Networking II: *Spring/Fall 2008.* I developed new hands-on assignments to give students experience with real-world networking tools and software (*e.g.*, Emulab, Quagga, Click). I also revamped the course around various high-level themes in networking, including layering, resource sharing, and tree formation (routing and forwarding, etc.). Finally, I developed over 20 new lectures for the syllabus, as well as new problem sets which can be re-used for future offerings of the course.

CS 6262 Network Security: *Spring 2009.* I updated the syllabus to include recent network attacks (*e.g.*, spam, botnets, reflection attacks, etc.) and also to integrate more hands-on assignments. Updating problem sets and project lists.

CS 7260 Internetworking Architectures and Protocols: *Spring 2006.* I developed a new project-based graduate course with substantial programming assignments using a wide variety of state-of-the-art networking software tools and platforms (*e.g.*, rcc, PlanetLab, scriptroute, NetFlow, etc.). I contributed questions to a larger bank of questions also used in graduate-level networking courses at Carnegie Mellon and MIT. Finally, I developed 24 new lectures, many based on current "hot topics" in computer networking (*e.g.*, spam, botnets, traffic anomaly detection, etc.)

Spring 2007. I developed two new course modules: (1) sound techniques for network measurement; and (2) evaluation platforms (Emulab, VINI, etc.). I designed new problem sets on these topics. With faculty at Carnegie Mellon, I instituted the use of a cross-institutional online forum for paper discussion. Students read papers from the CS 7260 syllabus and commented on papers before class to help stimulate paper discussion; students also read the discussion blog and could comment on papers being discussed in networking classes at other schools.

C.   Individual Student Guidance

C.1.   Postdocs and Research Scientists Supervised

Dave Levin   Department of Computer Science
> *Fall 2012 -*
> *Various networking systems research topics, including wireless networking and software defined networking.*

Stephen Woodrow   College of Computing
> *Spring 2011 - Summer 2012*
> *Research on the performance of Internet access networks and development for the BISmark project.*
> **Stephen is now at Stripe, a bay area startup.**

Nazanin Magharei   College of Computing
> *Spring 2011 - Spring 2012*
> *Research on the performance of Internet access networks.*
> **Nazanin is now a full-time employee at Cisco Systems.**

Cristian Lumezanu   College of Computing
> *Fall 2009 - Fall 2011*
> *Research on Internet measurement and economics.*
> **Cristian is now a researcher at NEC Research Labs.**

C.2.   Ph.D. Students Supervised

Arpit Gupta   Department of Computer Science
> *Fall 2013 - Present*

Ben Jones   Department of Computer Science
> *Fall 2013 - Present*

Sean Donovan   Department of Computer Science
Fall 2013 - Present

Swati Roy   Department of Computer Science
Fall 2013 - Present

Sarthak Grover   Department of Computer Science
Fall 2012 - Present

Muhammad Shahbaz   Department of Computer Science
Fall 2012 - Present

Abhinav Narain   Department of Computer Science
Fall 2011 - Present
Research on performance of home wireless networks.

Xinyu Xing   College of Computing
Fall 2011 - Present
Research on anti-censorship.

Hyojoon Kim   College of Computing
Fall 2009 - Present
Research on programmable networks and network configuration.
Passed qualifier.

Bilal Anwer   College of Computing
Fall 2008 - Present
Research on support for hardware forwarding in virtual network environments.
Passed qualifier.

Yogesh Mundada   College of Computing
Fall 2007 - Present
Research on a data-leak prevention system for Web applications. Development of experiment specification for VINI and integration of VINI with Emulab.
Passed qualifier.

Robert Lychev   College of Computing
Fall 2008 - Present
Research on contract enforcement for transit markets.
Passed qualifier.

Sam Burnett   College of Computing
Fall 2008 - Present
Design and implementation of anti-censorship systems.
Passed qualifier.

Srikanth Sundaresan   College of Computing
Fall 2008 - Present
Research on access network performance and online traffic engineering.
Passed thesis proposal.

Shuang Hao   College of Computing
Fall 2007 - Present
Research on botnet detection, network monitoring, and spam filtering.
Passed qualifier.

Maria Konte   College of Computing
Fall 2007 - Present
Measurement study of fast-flux networks.
Passed qualifier.

Vytautas Valancius   College of Computing
Summer 2007 - Spring 2012
Research on interdomain routing and network virtualization.
Graduated, now at Google.

Murtaza Motiwala   College of Computing
Fall 2006 - Spring 2012
Research on (1) in-band troubleshooting and (2) scalable network architectures for path diversity, including path splicing.
Graduated, now at Google.

Mukarram Bin Tariq   College of Computing
Spring 2007 - Spring 2010
Co-advised with Mostafa Ammar. Research on statistical inference methods for network planning and troubleshooting problems. Mukarram's dissertation work is now part of operational systems at Google.
Graduated. Now at Google in the network monitoring group.

Anirudh Ramachandran   College of Computing
Spring 2006 - Present
Research on network-level behavior of spammers and passive botnet detection.
Graduated; winner of the Georgia Tech Dissertation Award. Now the founder of a data-leak prevention startup, Nouvou.

C.3.   Masters Students Supervised

Sachit Muckaden   College of Computing
Spring 2013
Mobile performance measurement, development of MySpeedTest, and Android-based mobile performance measurement tool that is now in widespread use across 130 countries.

Swati Roy   Electrical and Computer Engineering
Fall 2012-Spring 2013
Study of correlated lantecy spikes in home networks.

Abhishek Jain   College of Computing
Fall 2011 - Fall 2012
Design and implementation of `networkdashboard.org`, *a front end Web interface for network data gathered from home networks.*

Ankur Nayak   College of Computing
Spring 2009 - Spring 2010
Dynamic access control with programmable switches.

Umayr Hassan   College of Computing
   Fall 2008 - Spring 2010
   Research on the design of a market for Internet transit, and on home network configuration.
   Umayr now works full-time at Bloomberg.

Nadeem Syed   College of Computing
   Spring 2007 - Spring 2008
   Co-advised with Alex Gray. Developing and implementing new machine learning techniques for fast disruption detection.
   Nadeem is in the MBA program at Georgia Tech.

Kaushik Bhandakar   College of Computing
   Spring 2007 - Summer 2008
   Experiments for VINI performance benchmarking; implementation and prototyping for the "Pedigree" packet provenance project; research on incentives in BitTorrent.
   Kaushik now works full-time at Google.

Samantha Lo   Hong Kong Polytechnic University
   Spring 2007
   Research on market-based network architectures and inbound traffic engineering.
   Samantha is now a Ph.D. student at Georgia Tech.

Manas Khadilkar   College of Computing
   Fall 2006 - Spring 2007
   Research on efficient settings of lease times for DHCP address allocation. Algorithm in development, to be used on the Georgia Tech campus network for optimizing lease time settings.
   Manas now works full-time for Expedia.

Han Lu   College of Computing
   Fall 2006 - Spring 2007
   Research on spam traffic patterns by IP address space.

Chris Kelly   College of Computing
   Fall 2006 - Fall 2007
   Developing new software features for the Campus-Wide Performance Monitoring and Recovery (CPR) project.
   Chris now works full-time for SugarCRM, an Atlanta-based startup.

Yiyi Huang   College of Computing
   Spring 2006 - Fall 2009
   Co-advised with Jim Xu. Research on fast, distributed network anomaly detection.
   Yiyi now works full-time at Microsoft.

Winston Wang   M.I.T. EECS
   Fall 2002 - Spring 2003
   Thesis on an implementation of the Infranet anti-censorship system received MIT's Charles and Jennifer Johnson Thesis Prize.

C.4.   Undergraduate Students Supervised

Jake Martin   College of Computing
   Spring 2012
   Research on prioritizing application traffic in home networks

Michael Dandy   College of Computing
Summer 2012 - Fall 2012
Design of usage cap management interface for the BISmark platform. Study of incentive schemes for encouraging users to shift traffic demands to off-peak hours.

Andrew Kahn   Department of Computer Science, Northwestern University
Summer 2012
Design and implementation of a captive portal system for the BISmark home router platform.

Alex Wong   College of Computing
Summer 2012
Design and implementation of `networkdashboard.org`*, a front end Web interface for network data gathered from home networks.*

Alfred Roberts   College of Computing
Fall 2011 - Present
Design and implementation of `networkdashboard.org`*, a front end Web interface for network data gathered from home networks.*

Alex Reimers   College of Computing
Spring 2009
Worked on dynamic access control (a replacement of Georgia Tech OIT's current authentication system) with programmable switches.
Alex now works full time at BigSwitch, an OpenFlow-based startup.

Megan Elmore   College of Computing
Fall 2007 - Spring 2009
Experiments for interdomain path splicing; design and implementation of the path splicing prototype. Work received 2nd prize in 2008 Georgia Tech College of Computing undergraduate research competition. Megan was also the winner of the 2009 College of Computing Undergraduate Research Award, and the 2009 Sigma Xi Best Undergraduate Researcher Award. Megan is now a Ph.D. student at Stanford University.

Hongyi Hu   M.I.T. EECS
Spring 2005 - Fall 2005
Extensions to the rcc router configuration checker tool for static configuration analysis of internal routing protocol configurations.

C.5.   Special Projects

Dan Doozan   College of Computing
Fall 2011 - Summer 2012
Research on anti-censorship and filter bubbles.

Mona Chitnis   College of Computing
Spring 2010
Research on OpenFlow network architectures.

Sravanthi Gondhi   College of Computing
Spring 2010
Research on online traffic engineering.

Shruti Gupta   College of Computing
Spring 2010
Research on online traffic engineering.

Utkarsh Shrivastava   College of Computing
Spring 2010
Research on network-level behavior of spammers.

Pooja Rajanna   College of Computing
Spring 2010
Research on network-level behavior of spammers.

Luxmi Saha   College of Computing
Spring 2010
Research on data-center scheduling algorithms.

Dongchan Kim   College of Computing
Fall 2009
Research on spam filtering.

Sonali Batra   College of Computing
Summer 2009
Research on anti-phishing techniques.

Radhika Partharathy   College of Computing
Fall 2008
Research on anti-phishing techniques.

Sagar Mehta   College of Computing
Fall 2006 - Spring 2008
Research on anti-phishing techniques.

Bhairav Dutia   College of Computing
Fall 2006
Research on anti-censorhip techniques and countermeasures.

Megan Benoit   College of Computing
Fall 2006
Research on spammers' email address harvesting practices.

Amit Khanna   College of Computing
Fall 2006
Implemented Secure BGP (S-BGP) in the Quagga software router. Software publically available and operators are using the codebase for ongoing work on certificates for secure routing.

Daniel Mentz   College of Computing
Spring 2006
Research on campus network security troubleshooting.

Buddy Moore   College of Computing
Summer 2006
Implemented distributed version of the Infranet anti-censorship software. Publicly available.

II. RESEARCH AND CREATIVE SCHOLARSHIP

A. Theses

A.0.1   Nick Feamster. *Proactive Techniques for Correct and Predictable Internet Routing*. PhD thesis, Massachusetts Institute of Technology, February 2006. Winner of the MIT George M. Sprowls Honorable Mention for Best MIT Ph.D. Dissertation in Computer Science.

A.0.2   Nick Feamster. Adaptive delivery of real-time streaming video. Master's thesis, Massachusetts Institute of Technology, May 2001. Winner of the MIT EECS William A. Martin Memorial Thesis Award.

B. Journal Publications

B.0.1   S. Burnett and N. Feamster. Making sense of internet censorship: A new frontier for internet measurement. *ACM SIGCOMM Computer Communications Review*, 43(3), July 2013.

B.0.2   Hyojoon Kim and Nick Feamster. Improving network management with software defined networking. *Communications Magazine, IEEE*, 51(2):114–119, 2013.

B.0.3   Mohammed Mukarram bin Tariq, Vytautas Valancius, Kaushik Bhandakar, Amgad Zeitoun, Nick Feamster, and Mostafa Ammar. Answering "What-If" Deployment and Configuration Questions with WISE: Techniques and Deployment Experience. *IEEE/ACM Transactions on Networking*, January 2013.

B.0.4   S. Sundaresan, W. de Donato, N. Feamster, R. Teixeira, S. Crawford, and A. Pescape. Measuring home broadband performance. *Communications of the ACM*, 55(9), September 2012.

B.0.5   Srikanth Sundaresan, Nazanin Magharei, Nick Feamster, and Renata Teixeira. Accelerating last-mile web performance with popularity-based prefetching. *ACM SIGCOMM Computer Communication Review*, 42(4):303–304, 2012.

B.0.6   Marshini Chetty and Nick Feamster. Refactoring Network Infrastructure to Improve Manageability: A Case Study of Home Networking. *ACM SIGCOMM Computer Communications Review*, 42(3), July 2012.

B.0.7   Murtaza Motiwala, Amogh Dhamdhere, and Nick Feamster. Towards a Cost Model for Network Traffic. *ACM SIGCOMM Computer Communications Review*, 42(1), January 2012.

B.0.8   Nick Feamster and Jennifer Rexford. Getting Students' Hands Dirty With Clean-Slate Networking. *ACM SIGCOMM Computer Communications Review*, December 2011.

B.0.9   Nick Feamster, Lixin Gao, and Jennifer Rexford. A Survey of Virtual LAN Usage in Campus Networks. *IEEE Communications*, 49(7), July 2011.

B.0.10   T. Koponen, S. Shenker, H. Balakrishnan, N. Feamster, I. Ganichev, A. Ghodsi, P. B. Godfrey, N. McKeown, G. Parulkar, B. Raghavan J. Rexford, S. Arianfar, and D. Kuptsov. Architecting for Innovation. *ACM SIGCOMM Computer Communications Review*, 43(1), July 2011.

B.0.11   Ken Calvert, W. Keith Edwards, Nick Feamster, Rebecca Grinter, Ye Deng, and Xuzi Zhou. Instrumenting Home Networks. *ACM SIGCOMM Computer Communications Review*, 41(1), January 2011.

B.0.12   Bilal Anwer and Nick Feamster. Building a fast, virtualized data plane with programmable hardware. *ACM SIGCOMM Computer Communication Review*, April 2010.

| B.0.13 | Nick Feamster, Ramesh Johari, and Hari Balakrishnan. Stable Policy Routing with Provider Independence. *IEEE/ACM Transactions on Networking*, December 2007. |

B.0.13   Nick Feamster, Ramesh Johari, and Hari Balakrishnan. Stable Policy Routing with Provider Independence. *IEEE/ACM Transactions on Networking*, December 2007.

B.0.14   Nick Feamster and Jennifer Rexford. Network-Wide Prediction of BGP Routes. *IEEE/ACM Transactions on Networking*, June 2007.

B.0.15   Nick Feamster, Jaeyeon Jung, and Hari Balakrishnan. An Empirical Study of "Bogon" Route Advertisements. *ACM Computer Communications Review*, 35(1):63–70, November 2004.

B.0.16   Nick Feamster, Jay Borkenhagen, and Jennifer Rexford. Guidelines for Interdomain Traffic Engineering. *ACM Computer Communications Review*, 33(5):19–30, October 2003.

C.   Books and Book Chapters

C.0.1   Anirudh Ramachandran, Nick Feamster, and David Dagon. *Botnet Detection: Countering the Largest Security Threat*. Springer, 2008. *Chapter:* Revealing Botnet Membership with DNSBL Counterintelligence.

D.   Refereed Conference Publications

D.0.1   X. Xing, W. Ming, D. Doozan, A. Snoeren, N. Feamster, and W. Lee. Take this personally: Pollution attacks on personalized services. In *Proc. 22th USENIX Security Symposium*, Washington, DC, August 2013.
Acceptance rate: 16%

D.0.2   Vytautas Valancius, Bharath Ravi, Nick Feamster, and Alex C Snoeren. Quantifying the benefits of joint content and network routing. In *Proc. ACM SIGMETRICS*, Pittsburgh, PA, June 2013.
Acceptance rate: 11%

D.0.3   Cristian Lumezanu and Nick Feamster. Measuring common spam on email and Twitter. In *Proc. ACM SIGCOMM Internet Measurement Conference*, Boston, Massachusetts, November 2012.
Acceptance rate: 24%

D.0.4   Ethan Katz-Bassett, Colin Scott, David Choffnes, Italo Cunha, Vytautas Valancius, Nick Feamster, Harsha Madhyastha, T. Anderson, and A. Krishnamurthy. LIFEGUARD: Practical Repair of Persistent Route Failures. In *Proc. ACM SIGCOMM*, Helsinki, Finland, August 2012.
Acceptance rate: 14%

D.0.5   Cristian Lumezanu and Nick Feamster. #bias: Measuring Propagandistic Behavior on Twitter. In *International Conference on Weblogs and Social Media (ICWSM)*, Dublin, Ireland, June 2012.
Acceptance rate: 20%

D.0.6   Maria Konte and Nick Feamster. Re-wiring Activity of Malicious Networks. In *Proc. Passive and Active Measurement Conference*, Vienna, Austria, March 2012.
Acceptance rate: 30%

D.0.7   Hyojoon Kim and Theophilus Benson and Aditya Akella and Nick Feamster. Understanding the Evolution of Network Configuration: A Tale of Two Campuses. In *Proc. ACM SIGCOMM Internet Measurement Conference*, Berlin, Germany, November 2011.
Acceptance rate: 19%

D.0.8   Shuang Hao, Nick Feamster, and Ramakant Pandrangi. Monitoring the Initial DNS Behavior of Spammers. In *Proc. ACM SIGCOMM Internet Measurement Conference*, Berlin, Germany, November 2011.
Acceptance rate: 19%

D.0.9   Vytautas Valancius, Cristian Lumezanu, Nick Feamster, Ramesh Johari, and Vijay Vazirani. How Many Tiers? Pricing in the Internet Transit Market. In *Proc. ACM SIGCOMM*, Toronto, Ontario, Canada, August 2011.
Acceptance rate: 14%

D.0.10   Nick Feamster Renata Teixeira Sam Crawford Antonio Pescape Srikanth Sundaresan, Walter de Donato. Broadband Internet Performance: A View From the Gateway. In *Proc. ACM SIGCOMM*, Toronto, Ontario, Canada, August 2011.
Acceptance rate: 14%

D.0.11   Anirudh Ramachandran, Anirban Dasgupta, Nick Feamster, and Kilian Weinberger. Spam or Ham? Characterizing and Detecting Fraudulent "Not Spam" Reports in Web Mail Systems. In *8th Annual Collaboration, Electronic messaging, Anti-Abuse and Spam Conference (CEAS 2011)*, Perth, Australia, September 2011.

D.0.12   Bilal Anwer, Murtaza Motiwala, Mukarram bin Tariq, and Nick Feamster. SwitchBlade: A Platform for Rapid Deployment of Network Protocols on Programmable Hardware. In *Proc. ACM SIGCOMM*, New Delhi, India, August 2010.
Acceptance rate: 12%

D.0.13   Sam Burnett, Nick Feamster, and Santosh Vempala. Chipping Away at Censorship Firewalls with Collage. In *Proc. 19th USENIX Security Symposium*, Washington, DC, August 2010.
Acceptance rate: 15%

D.0.14   Manos Antonakakis and Roberto Perdisci and David Dagon and Wenke Lee and Nick Feamster. Building a Dynamic Reputation System for DNS. In *Proc. 19th USENIX Security Symposium*, Washington, DC, August 2010.
Acceptance rate: 15%

D.0.15   Vytautas Valancius, Nick Feamster, Jennifer Rexford, and Akihiro Nakao. Wide-Area Routing for Distributed Services. In *Proc. USENIX Annual Technical Conference*, Boston, MA, June 2010.
Acceptance rate: 17%

D.0.16   Roberto Perdisci, Wenke Lee, and Nick Feamster. Behavioral Clustering of HTTP-Based Malware. In *Proc. 7th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, San Jose, CA, April 2010.
Acceptance rate: 16%

D.0.17   Mohammed Mukarram bin Tariq, Murtaza Motiwala, Nick Feamster, and Mostafa Ammar. Detecting General Network Neutrality Violations with Causal Inference. In *4th International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, Rome, Italy, December 2009.
Acceptance rate: 17%

D.0.18   Mohammed Mukarram bin Tariq, Ahmed Mansy, Nick Feamster, and Mostafa Ammar. Measuring VLAN-Induced Sharing on a Campus Network. In *Proc. ACM SIGCOMM Internet Measurement Conference*, Chicago, Illinois, October 2009.
Acceptance rate: 22%

D.0.19   Italo Cunha, Renata Teixeira, Nick Feamster, and Christophe Diot. Techniques for Fast and Accurate Network Tomography. In *Proc. ACM SIGCOMM Internet Measurement Conference*, Chicago, Illinois, October 2009.
Acceptance rate: 22%

D.0.20   Shuang Hao, Nadeem Syed, Nick Feamster, Alexander Gray, and Sven Krasser. Detecting Spammers with SNARE: Spatio-temporal Network-level Automatic Reputation Engine. In *Proc. 18th USENIX Security Symposium*, Montreal, Quebec, Canada, August 2009.
Acceptance rate: 15%

D.0.21   Maria Konte, Nick Feamster, and Jaeyeon Jung. Dynamics of Online Scam Infrastructure. In *Proc. Passive and Active Measurement Conference*, Seoul, Korea, March 2009.
Acceptance rate: 20%   **Best paper award.**

D.0.22   Anirudh Ramachandran, Srinivasan Seetharaman, Nick Feamster, and Vijay Vazirani. Fast Monitoring of Traffic Subpopulations. In *Proc. ACM SIGCOMM Internet Measurement Conference*, Vouliagmeni, Greece, October 2008.
Acceptance rate: 17%

D.0.23   Murtaza Motiwala, Megan Elmore, Nick Feamster, and Santosh Vempala. Path Splicing. In *Proc. ACM SIGCOMM*, Seattle, WA, August 2008.
Acceptance rate: 12%

D.0.24   Mohammed Mukarram bin Tariq, Amgad Zeitoun, Nick Feamster, and Mostafa Ammar. Answering What-If Deployment and Configuration Questions with WISE. In *Proc. ACM SIGCOMM*, Seattle, WA, August 2008.
Acceptance rate: 12%

D.0.25   David Andersen, Hari Balakrishnan, Nick Feamster, and Scott Shenker. Accountable Internet Protocol (AIP). In *Proc. ACM SIGCOMM*, Seattle, WA, August 2008.
Acceptance rate: 12%

D.0.26   Nick Feamster and Alexander Gray. Can Great Research Be Taught? Independent Research with Cross-Disciplinary Thinking and Broader Impact. In *ACM SIGCSE Technical Symposium on Computer Science Edudation (SIGCSE)*, Portland, OR, March 2008.

D.0.27   Anirudh Ramachandran, Nick Feamster, and Santosh Vempala. Filtering Spam with Behavioral Blacklisting. In *Proc. 14th ACM Conference on Computer and Communications Security (CCS)*, Alexandria, VA, October 2007.
Acceptance rate: 24%

D.0.28   Manas Khadilkar, Nick Feamster, Russ Clark, and Matt Sanders. Usage-Based DHCP Lease Time Optimization. In *Proc. ACM SIGCOMM Internet Measurement Conference*, San Diego, CA, October 2007.
Acceptance rate: 24%

D.0.29   Yiyi Huang, Nick Feamster, Anukool Lakhina, and Jim Xu. Exposing Routing Problems with Network-Wide analysis. In *Proc. ACM SIGMETRICS*, San Diego, CA, June 2007.
Acceptance rate: 17%

D.0.30   Feng Wang, Nick Feamster, and Lixin Gao. Measuring the contributions of routing dynamics to prolonged end-to-end internet path failures. In *Proc. IEEE Conference on Global Communications (GlobeCom)*, Washington, DC, November 2007.
Acceptance rate: 40%

D.0.31   Christopher P. Lee, Keshav Attrey, Carlos Caballero, Nick Feamster, Milena Mihail, and John A. Copeland. MobCast: Overlay Architecture for Seamless IP Mobility using Scalable Anycast Proxies. In *IEEE Wireless Communications and Networking Conference*, Hong Kong, March 2007.
Acceptance rate: 47%

D.0.32   Anirudh Ramachandran and Nick Feamster. Understanding the Network-Level Behavior of Spammers. In *Proc. ACM SIGCOMM*, Pisa, Italy, August 2006. An earlier version appeared as Georgia Tech TR GT-CSS-2006-001.
Acceptance rate: 12%   **Best student paper award.**

D.0.33   Andy Bavier, Nick Feamster, Mark Huang, Larry Peterson, and Jennifer Rexford. In VINI Veritas: Realistic and controlled network experimentation. In *Proc. ACM SIGCOMM*, Pisa, Italy, August 2006.
Acceptance rate: 12%

D.0.34   Nick Feamster and Hari Balakrishnan. Correctness Properties for Internet Routing. In *Forty-third Annual Allerton Conference on Communication, Control, and Computing*, Monticello, IL, September 2005.

D.0.35   Nick Feamster, Ramesh Johari, and Hari Balakrishnan. The Implications of Autonomy for Stable Policy Routing. In *Proc. ACM SIGCOMM*, pages 25–36, Philadelphia, PA, August 2005.
Acceptance rate: 11%

D.0.36   Michael Freedman, Mythili Vutukuru, Nick Feamster, and Hari Balakrishnan. Geographic Locality of IP Prefixes. In *Proc. ACM SIGCOMM Internet Measurement Conference*, New Orleans, LA, October 2005.
Acceptance rate: 24%

D.0.37   Nick Feamster and Hari Balakrishnan. Detecting BGP Configuration Faults with Static Analysis. In *Proc. 2nd Symposium on Networked Systems Design and Implementation (NSDI)*, pages 43–56, Boston, MA, May 2005.
Acceptance rate: 22%   **Best paper award.**

D.0.38   Matthew Caesar, Don Caldwell, Nick Feamster, Jennifer Rexford, Aman Shaikh, and Kobus van der Merwe. Design and Implementation of a Routing Control Platform. In *Proc. 2nd Symposium on Networked Systems Design and Implementation (NSDI)*, pages 15–28, Boston, MA, May 2005.
Acceptance rate: 22%

D.0.39   Nick Feamster, Zhuoqing Morley Mao, and Jennifer Rexford. BorderGuard: Detecting Cold Potatoes from Peers. In *Proc. ACM SIGCOMM Internet Measurement Conference*, pages 213–218, Taormina, Sicily, Italy, October 2004.
Acceptance rate: 25%

D.0.40   Nick Feamster, Jared Winick, and Jennifer Rexford. A Model of BGP Routing for Network Engineering. In *Proc. ACM SIGMETRICS*, pages 331–342, New York, NY, June 2004.
Acceptance rate: 12%

D.0.41   Nick Feamster, David Andersen, Hari Balakrishnan, and M. Frans Kaashoek. Measuring the Effects of Internet Path Faults on Reactive Routing. In *Proc. ACM SIGMETRICS*, pages 126–137, San Diego, CA, June 2003.
Acceptance rate: 12%

D.0.42	Nick Feamster, Magdalena Balazinska, Greg Harfst, Hari Balakrishnan, and David Karger. Infranet: Circumventing Web censorship and surveillance. In *Proc. 11th USENIX Security Symposium*, San Francisco, CA, August 2002. *Acceptance rate: 17%* **Best student paper award.**
D.0.43	Kevin Fu, Emil Sit, Kendra Smith, and Nick Feamster. Dos and don'ts of client authentication on the Web. In *Proc. 10th USENIX Security Symposium*, Washington, DC, August 2001. *Acceptance rate: 28%* **Best student paper award.**
D.0.44	Susie Wee, John Apostolopoulos, and Nick Feamster. Field-to-frame transcoding with temporal and spatial downsampling. In *IEEE International Conference on Image Processing*, October 1999. *Acceptance rate: 45%*
D.0.45	Nick Feamster and Susie Wee. An MPEG-2 to H.263 transcoder. In *SPIE Voice, Video, and Data Communications Conference*, Boston, MA, September 1999.

E. Workshop Publications

E.0.1	B. Anwer, T. Benson, N. Feamster, D. Levin, and J. Rexford. A slick control plane for network middleboxes. In *Open Network Summit*, Santa Clara, CA, April 2013. *Acceptance rate: 23%*
E.0.2	N. Feamster, D. Levin, J. Rexford, S. Shenker, R. Clark, and J. Bailey. Sdx: A software defined internet exchange. In *Open Network Summit*, Santa Clara, CA, April 2013. *Acceptance rate: 23%*
E.0.3	Andreas Voellmy, Hyojoon Kim, and Nick Feamster. Procera: A language for high-level reactive network control. In *ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Helsinki, Finland, August 2012.
E.0.4	Jake Martin and Nick Feamster. User-driven dynamic prioritization in the home. In *ACM SIGCOMM Workshop on Measurements Up the Stack (W-MUST)*, Helsinki, Finland, August 2012.
E.0.5	Srikanth Sundaresan, Nick Feamster, Renata Teixeira, Anthony Tang, W. Keith Edwards, Rebecca Grinter, Marshini Chetty, and Walter de Donato. Helping Users Shop for ISPs with Internet Nutrition Labels. In *ACM SIGCOMM Workshop on Home Networking (HomeNets)*, Toronto, Ontario, Canada, August 2011.
E.0.6	Nick Feamster and Jennifer Rexford. Getting Students' Hands Dirty With Clean-Slate Networking. In *SIGCOMM Workshop on Network Education (NetEd)*, Toronto, Ontario, Canada, August 2011.
E.0.7	Yogesh Mundada, Anirudh Ramachandran, and Nick Feamster. SilverLine: Data and Network Isolation for Cloud Services. In *3rd USENIX Workshop on Hot Topics in Cloud Computing (HotCloud '11)*, June 2011.
E.0.8	Bilal Anwer, Ankur Nayak, Nick Feamster, and Ling Liu. Network I/O Fairness in Virtual Machines. In *ACM SIGCOMM Workshop on Virtualized Infrastrastructure, Services, and Architectures (VISA)*, New Delhi, India, September 2010.
E.0.9	Nick Feamster. Outsourcing Home Network Security. In *ACM SIGCOMM Workshop on Home Networking (HomeNets)*, New Delhi, India, September 2010.

E.0.10   Ken Calvert, W. Keith Edwards, Nick Feamster, Rebecca Grinter, Ye Deng, and Xuzi Zhou. Instrumenting Home Networks. In *ACM SIGCOMM Workshop on Home Networking (HomeNets)*, New Delhi, India, September 2010.

E.0.11   Bilal Anwer and Nick Feamster. Building a Fast, Virtualized Data Plane with Programmable Hardware. In *ACM SIGCOMM Workshop on Virtualized Infrastrastructure, Services, and Architectures (VISA)*, Barcelona, Spain, August 2009.

E.0.12   Ankur Nayak, Alex Reimers, Russ Clark, and Nick Feamster. Resonance: Dynamic Access Control for Enterprise Networks. In *ACM SIGCOMM Workshop on Research in Enterprise Networks (WREN)*, Barcelona, Spain, August 2009.

E.0.13   Sapan Bhatia, Murtaza Motiwala, Wolfgang Muhlbauer, Yogesh Mundada, Vytautas Valancius, Andy Bavior, Nick Feamster, Larry Peterson, and Jennifer Rexford. Trellis: A Platform for Building Flexible, Fast Virtual Networks on Commodity Hardware. In *3rd International Workshop on Real Overlays & Distributed Systems*, December 2008.

E.0.14   Vytautas Valancius, Nick Feamster, Ramesh Johari, and Vijay Vazirani. MINT: A Market for Internet Transit. In *ACM SIGCOMM CoNext Workshop on Re-Architecting the Internet*, December 2009.

E.0.15   Mohammed Mukarram bin Tariq, Murtaza Motiwala, and Nick Feamster. NANO: Network Access Neutrality Observatory. In *Proc. 7th ACM Workshop on Hot Topics in Networks (Hotnets-VII)*, Calgary, Alberta, Canada, October 2008.
Acceptance rate: 20%

E.0.16   S. Yardi, N. Feamster, and A. Bruckman. Photo-Based Authentication Using Social Networks. In *Proc. ACM SIGCOMM Workshop on Online Social Networks*, Seattle, WA, August 2008.

E.0.17   Anirudh Ramachandran and Nick Feamster. Authenticated Out-of-Band Communication over Social Links. In *Proc. ACM SIGCOMM Workshop on Online Social Networks*, Seattle, WA, August 2008.

E.0.18   Murtaza Motiwala, Nick Feamster, and Santosh Vempala. Path Splicing: Reliable Connectivity with Rapid Recovery. In *Proc. 6th ACM Workshop on Hot Topics in Networks (Hotnets-VI)*, Atlanta, GA, November 2007.
Acceptance rate: 18%

E.0.19   David G. Andersen, Hari Balakrishnan, Nick Feamster, and Scott Shenker. Holding the Internet Accountable. In *Proc. 6th ACM Workshop on Hot Topics in Networks (Hotnets-VI)*, Atlanta, GA, November 2007.
Acceptance rate: 18%

E.0.20   Anirudh Ramachandran, Atish das Sarma, and Nick Feamster. BitStore: An Incentive-Compatible Solution for Blocked Downloads in Bittorrent. In *ACM Joint Workshop on The Economics of Networked Systems and Incentive-Based Computing (NetEcon)*, San Diego, CA, June 2007.

E.0.21   Anirudh Ramachandran, Nick Feamster, and David Dagon. Revealing Botnet Membership with DNSBL Counter-Intelligence. In *2nd USENIX Workshop on Steps to Reducing Unwanted Traffic on the Internet (SRUTI)*, San Jose, CA, July 2006.

E.0.22   Anirudh Ramachandran, David Dagon, and Nick Feamster. Can DNSBLs Keep Up with Bots? In *3rd Conference on Email and Anti-Spam (CEAS)*, Mountain View, CA, July 2006.

E.0.23	Nick Feamster, Hari Balakrishnan, and Jennifer Rexford. Some foundational problems in interdomain routing. In *Proc. 3nd ACM Workshop on Hot Topics in Networks (Hotnets-III)*, San Diego, CA, November 2004.
E.0.24	Nick Feamster, Hari Balakrishnan, Jennifer Rexford, Aman Shaikh, and Kobus van der Merwe. The Case for Separating Routing from Routers. In *ACM SIGCOMM Workshop on Future Directions in Network Architecture*, pages 5–12, Portland, OR, September 2004.
E.0.25	Nick Feamster and Roger Dingledine. Location diversity in anonymity networks. In *ACM Workshop on Privacy in the Electronic Society*, Washington, DC, October 2004.
E.0.26	Nick Feamster, Magdalena Balazinska, Winston Wang, Hari Balakrishnan, and David Karger. Thwarting Web censorship with untrusted messenger discovery. In *3rd Workshop on Privacy Enhancing Technologies*, Dresden, Germany, March 2003.
E.0.27	Nick Feamster. Practical Verification Techniques for Wide-Area Routing. In *Proc. 2nd ACM Workshop on Hot Topics in Networks (Hotnets-II)*, pages 87–92, Cambridge, MA, November 2003.
E.0.28	Nick Feamster and Hari Balakrishnan. Towards a Logic for Wide-Area Internet Routing. In *ACM SIGCOMM Workshop on Future Directions in Network Architecture*, pages 289–300, Karlsruhe, Germany, August 2003.
E.0.29	David G. Andersen, Nick Feamster, Steve Bauer, and Hari Balakrishnan. Topology inference from BGP routing dynamics. In *Proc. ACM SIGCOMM Internet Measurement Workshop*, Marseille, France, November 2002. *Acceptance rate: 42%*
E.0.30	Nick Feamster and Hari Balakrishnan. Packet loss recovery for streaming video. In *Proc. 12th International Packet Video Workshop (PV 2002)*, Pittsburgh, PA, April 2002.
E.0.31	Nick Feamster, Deepak Bansal, and Hari Balakrishnan. On the interactions between congestion control and layered quality adaptation for streaming video. In *11th International Packet Video Workshop*, Kyongju, Korea, May 2001.

F. Other

F.1. Submitted Journal Papers

Removed for external version.

F.2. Submitted Conference and Workshop Papers

Removed for external version.

F.3. Other Technical Reports, Unrefereed Papers, and Drafts in Preparation

F.3.1	S. Sundaresan, Y. Grunenberger, N. Feamster, D. Papagiannaki, D. Levin, and R. Teixeira. WTF? Locating Performance Problems in Home Networks. Technical Report GT-CS-13-03, Georgia Institute of Technology, May 2013.
F.3.2	Srikanth Sundaresan, Cristian Lumezanu, and Nick Feamster. Autonomous Traffic Engineering with Self-Configuring Topologies. Technical Report GT-CS-10-16, Georgia Tech School of Computer Science, 2010.

F.3.3   Srikanth Sundaresan, Lucas Di Cioccio, Nick Feamster, and Renata Teixeira. Which Factors Affect Access Network Performance? Technical Report GT-CS-10-04, Georgia Tech School of Computer Science, November 2010.

F.3.4   Anirudh Ramachandran, Nick Feamster, Kobus van der Merwe, Balachander Krishnamurthy, and Oliver Spatschek. Fishing for Phishing in the Network Stream. Technical Report http://smartech.gatech.edu/handle/1853/25463, Georgia Tech School of Computer Science, March 2010.

F.3.5   Yiyi Huang, Nick Feamster, and Renata Teixeira. Practical Issues with Using Network Tomography for Fault Diagnosis. *ACM SIGCOMM Computer Communication Review (CCR)*, 38(5), October 2008. Editorial section.

F.3.6   Vytautas Valancius and Nick Feamster. Managing BGP Routes with a BGP Session Multiplexer. Technical Report GT-CS-08-05, Georgia Tech School of Computer Science, July 2008.

F.3.7   Anirudh Ramachandran, Kaushik Bhandakar, Mohammed Mukarram bin Tariq, and Nick Feamster. Packets with Provenance. Technical Report GT-CS-08-02, Georgia Tech School of Computer Science, February 2008.

F.3.8   Sapan Bhatia, Murtaza Motiwala, Wolfgang Muhlbauer, Vytautas Valancius, Andy Bavior, Nick Feamster, Larry Peterson, and Jennifer Rexford. Hosting Virtual Networks on Commodity Hardware. Technical Report GT-CS-07-10, Georgia Institute of Technology, Atlanta, GA, October 2007.

F.3.9   Nick Feamster, Ramesh Johari, and Vijay Vazirani. AGORA: A Market for Internet Connectivity. In *Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO)*, Princeton, NJ, May 2007.

F.3.10   Murtaza Motiwala, Nick Feamster, and Santosh Vempala. Improving Interdomain Routing Security with BGP Path Splicing. In *Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO)*, Princeton, NJ, May 2007.

F.3.11   Vytautas Valancius and Nick Feamster. Layering the Interdomain Routing Layer. In *Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO)*, Princeton, NJ, May 2007.

F.3.12   Nick Feamster, Lixin Gao, and Jennifer Rexford. How to Lease the Internet in Your Spare Time. *ACM Computer Communications Review*, 37(1), January 2007. Editorial section.

F.3.13   Nick Feamster. Can Information from End Systems Improve Routing? In *Workshop on Internet Routing Evolution and Design (WIRED)*, Atlanta, GA, October 2006.

F.3.14   Murtaza Motiwala and Nick Feamster. Network Troubleshooting on Data Plane Coattails. In *Workshop on Internet Routing Evolution and Design (WIRED)*, Atlanta, GA, October 2006.

F.3.15   David G. Andersen and Nick Feamster. Challenges and opportunities in Internet data mining. Technical Report CMU-PDL-06-102, Carnegie Mellon University, January 2006.

F.3.16   Nick Feamster and Hari Balakrishnan. Verifying the correctness of wide-area Internet routing. Technical Report MIT-LCS-TR-948, Massachusetts Institute of Technology, May 2004.

F.3.17   Nick Feamster. Rethinking routing configuration: Beyond stimulus-response reasoning. In *Workshop on Internet Routing Evolution and Design (WIRED)*, Mt. Hood, OR, October 2003.

F.3.18	Nick Feamster and Jennifer Rexford. Network-Wide BGP Route Prediction for Traffic Engineering. In *Proc. SPIE ITCom*, volume 4868, pages 55–68, Boston, MA, August 2002.
F.3.19	Nick Feamster, Jennifer Rexford, and Jay Borkenhagen. Controlling the impact of BGP policy changes on IP traffic. Technical Report 011106-02, AT&T Labs–Research, Florham Park, NJ, November 2001.
F.3.20	Russ White, B. Akyol, and Nick Feamster. *Considerations in Validating the Path in Routing Protocols*. IETF, June 2005.

F.4. Software

F.4.1   *Project BISmark: An Application Platform for Home Networks.* Project BISmark (Broadband Internet Service Benchmark) is a platform for developing network management applications for home networks. The BISmark firmware is based on OpenWrt, an open-source operating system for home routers. Currently, BISmark includes a suite of passive and active network measurements that allows a home Internet user to continuously monitor various performance metrics, such as upstream and downstream throughput, latency, and packet loss. As of Spring 2013, BISmark is deployed in nearly 300 homes around the world in more than 20 countries. We are currently working both to expand the deployment and to extend the capabilities of the platform, to allow other researchers to use the platform for their own measurements.
See `http://projectbismark.net` for details.

F.4.2   *MySpeedTest: A Tool for Mobile Performance Measurement.* Building on the success of BISmark, my students Sachit Muckaden, Abhishek Jain, and I have developed a tool to measure performance from mobile cellular handsets. The application collects a variety of data, including latency and throughput measurements to a variety of servers around the world, hosted by Measurement Lab. The application is now deployed on more than 4,000 handsets in over 130 countries. Some of the most significant deployments are in developing countries, and we are currently collaborating with ResearchICTAfrica, a policy organization in Africa, to study the performance of both fixed and mobile broadband across the continent. Software is available at `http://goo.gl/28tx3`.

F.4.3   *Bobble: Bursting Online Filter Bubbles.* With students Xinyu Xing, Dan Doozan and colleague Wenke Lee, I have designed and developed Bobble, a Chrome extension that allows users to see how their Web searches appear from different vantage points. The filter bubble is a concept developed by Internet activist Eli Pariser in his book to describe a phenomenon in which websites use algorithms to predict what information a user may like to see based on the user's location, search history, etc. As a result, a website may only show information which agrees with the user's past viewpoints. A typical example is Google's personalized search results. To "pop" the bubbles created by Google search (also called de-personalization), our research group in the Georgia Tech Information Security Center is conducting ground-breaking research and developing software, Filter Bubble. Filter Bubble is a chrome extension that uses hundreds of nodes to distribute a user's Google search queries world wide each time the user performs a Google search. Using Filter Bubble, a user can easily see differences between his and others' Google search returns. The plugin has been installed by more than 100 users around the world and is available at `http://bobble.gtisc.gatech.edu/`.

F.4.4   *Appu: Measuring Online Privacy Footprints.* With so many web applications and sites in the current time, it's hard for a user to keep track of where does her personal information reside. With Appu, we aim to make this job easier for the end user. Appu keeps track of personal information such as passwords, username, birthdate, address,

credit card numbers, and social security number so that a user can find out all sites that store a particular bit of personal information. In the current beta release, Appu downloads personal information from sites where you have account and also tries to prevent password reuse across websites by warning users about it. Software is available at `http://appu.gtnoise.net/`

F.4.5   *Campus-Wide OpenFlow Deployment: Access and Information Flow Control for Enterprise Networks.* Resonance is a system for controlling access and information flow in an enterprise network. Network operators currently use access control systems that are coarse-grained (i.e., it is difficult to apply specialized policy to individual users) and static (i.e., it is difficult to quickly change the extent of a user's access). Towards fixing these problems, we have developed a system that allows network operators to program network policy using a controller that is distinct from the switch itself and can be programmed to implement network-wide policy. We have implemented and deployed this system in an operational network that spans two buildings on the Georgia Tech campus; the network sees regular use, and a deployment in Georgia Tech dormitories or the wireless network is planned for the near future. We first demonstrated the function of this network at the 7th GENI Engineering Conference in March 2010, and recently demonstrated a version on Resonance that facilitates various home network management tasks at the 2011 Open Network Summit.
See `http://groups.geni.net/geni/wiki/BGPMux` for details.

F.4.6   *NANO: Network Access Neutrality Observatory.* The Network Access Neutrality Observatory (NANO) is a system to help users determine whether their traffic is being discriminated against by an access ISP. In contrast to existing systems for detecting network neutrality violations, NANO makes no assumptions about the mechanism for discrimination or the services that the ISP might be discriminated against. NANO has been released in collaboration with Google as part of the Measurement Lab project. A preliminary version of the software was released to a small group of users in March 2009 for testing; a complete release is available for download at: `http://gtnoise.net/nano/`.

F.4.7   *Implementation of GENI Prototype: Virtual Networks and BGP Session Multiplexer.* In the process of developing software for the NSF-Sponsored GENI Project Office. This project (1) adds facilities and functions to the VINI testbed to enable experiments to carry traffic from real users; and (2) increases the experimental use of the VINI testbed by providing a familiar experiment management facility. The deliverables for this project all comprise software for supporting external connectivity and flexible, facile experimentation on the GENI testbed. The primary deliverables are a BGP session multiplexer—a router based on the Quagga software routing suite, software support for virtual tunnel and node creation, and integration of the above functionality with clearinghouse services developed as part of the ProtoGENI project.
See `http://groups.geni.net/geni/wiki/BGPMux`.

This project contributes to GENI design and prototyping through BGP mux development integration with ISPs; tunnel and topology establishment and management; ProtoGENI clearinghouse integration; and support for isolation and resource swapout. With researchers at Princeton, we have also built VINI, a large distributed testbed for specifying virtual network topologies and experimenting with routing protocols and architectures in a controlled, realistic emulation environment. See `http://vini-veritas.net/` for details.

F.4.8   *rcc: router configuration checker.* Static configuration analysis tool for Border Gateway Protocol (BGP) routing configurations. Downloaded by over 100 network operators and many large, nationwide backbone ISPs around the world. See `http://gtnoise.net/rcc/` for details.

F.4.9   *Infranet*. System for circumventing Web censorship firewalls (*e.g.*, those in China, Saudia Arabia, etc.). Available on Sourceforge. Featured in articles in *Technology Review*, *New Scientist*, and *Slashdot*. See `http://nms.lcs.mit.edu/projects/infranet/`.

F.4.10   *The Datapository*. Originally the "MIT BGP Monitor", the Datapository is growing to support multiple data feeds (*e.g.*, spam, end-to-end measurement probes, traceroutes, Abilene data, etc.). Currently used by researchers at Georgia Tech, Carnegie Mellon, University of Michigan, Princeton, MIT. See `http://www.datapository.net/` for details.

F.4.11   *Secure BGP Implementation*. Implementation of S-BGP in the Quagga software router. Our implementation may be used by Randy Bush and Geoff Huston in their project to develop a certificate infrastructure for secure routing protocols.

F.4.12   *SR-RTP*. Transport protocol for selective retransmission of packets in an MPEG video stream. Incorporated into "Oxygen TV" for MIT Project Oxygen. Some ideas incorporated into the OpenDivX video transport protocol.

F.5. Conference Posters and Demos

F.5.1   S. Roy and N. Feamster. Characterizing Correlated Latency Anomalies in Broadband Access Networks. In *Proc. ACM SIGCOMM*, Hong Kong, China, August 2013.

F.5.2   Hyojoon Kim, Mike Schlansker, Jose Renato Santos, Jean Tourrilhes, Yoshio Turner, and Nick Feamster. Coronet: Fault tolerance for software defined networks. In *Network Protocols (ICNP), 2012 20th IEEE International Conference on*, pages 1–2. IEEE, 2012.

F.5.3   Srikanth Sundaresan, Nazanin Magharei, Nick Feamster, and Renata Teixeira. Accelerating Last-Mile Web Performance with Popularity-Based Prefetching. In *Proc. ACM SIGCOMM*, Helsinki, Finland, August 2012.

F.5.4   Hyojoon Kim, Srikanth Sundaresan, Marshini Chetty, Nick Feamster, and W. Keith Edwards. Communicating with Caps: Managing Usage Caps in Home Networks. In *Proc. ACM SIGCOMM*, Toronto, Ontario, Canada, August 2011.

F.5.5   Maria Konte and Nick Feamster. Wide-Area Routing Dynamics of Malicious Networks. In *Proc. ACM SIGCOMM*, Toronto, Ontario, Canada, August 2011.

F.5.6   Vytautas Valancius, Hyojoon Kim, and Nick Feamster. Transit Portal: BGP Connectivity as a Service. In *Proc. ACM SIGCOMM*, New Delhi, India, August 2010. Demo.

F.5.7   Sam Burnett, Nick Feamster, and Santosh Vempala. Circumventing Censorship with Collage. In *Proc. ACM SIGCOMM*, New Delhi, India, August 2010. Demo.

F.5.8   Srikanth Sundaresan, Cristian Lumezanu, Nick Feamster, and Pierre Francois. Traffic Engineering with Self-Configuring Topologies. In *Proc. ACM SIGCOMM*, New Delhi, India, August 2010.

F.5.9   Anirudh Ramachandran, Yogesh Mundada, Mukarram bin Tariq, and Nick Feamster. Securing Enterprise Networks with Traffic Tainting. In *Proc. ACM SIGCOMM*, Barcelona, Spain, August 2009. Demo.

F.5.10   Vytautas Valancius, Nick Feamster, Jennifer Rexford, and Aki Nakao. Transit Portal: Bringing Connectivity to the Cloud. In *Proc. ACM SIGCOMM*, Barcelona, Spain, August 2009. Demo.

F.5.11	Murtaza Motiwala, Megan Elmore, Yogesh Mundada, and Nick Feamster. Network and End-System Support for Transparent Use of Multiple Paths. In *Proc. ACM SIGCOMM*, Barcelona, Spain, August 2009. Demo.
F.5.12	Sam Burnett, Nick Feamster, and Santosh Vempala. Circumventing Internet Censorship with Collage. In *Proc. 6th Symposium on Networked Systems Design and Implementation (NSDI)*, Boston, MA, April 2009. Demo.
F.5.13	Anirudh Ramachandran, Kaushik Bhandakar, Mohammed Mukarram bin Tariq, and Nick Feamster. Packets with Provenance. In *Proc. ACM SIGCOMM*, Seattle, WA, August 2008.
F.5.14	Yogesh Mundada, Murtaza Motiwala, , Vytautas Valancius, Andy Bavier, Nick Feamster, Larry Peterson, Sapan Bhatia, and Jennifer Rexford. Trinity: A Framework for Managing Wide-Area Virtual Networks. In *Proc. 5th Symposium on Networked Systems Design and Implementation (NSDI)*, San Francisco, CA, April 2008.
F.5.15	Vytautas Valancius and Nick Feamster. Multiplexing BGP Sessions with BGP-Mux. In *3rd International Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, New York, NY, December 2007.
F.5.16	Nadeem Syed, Nick Feamster, and Alex Gray. Predicting bad behavior. In *NIPS Workshop on Machine Learning in Adversarial Environments for Computer Security*, Whistler, Canada, December 2007.
F.5.17	Murtaza Motiwala, Andy Bavier, and Nick Feamster. In-Band Network Troubleshooting. In *Proc. Fourth Symposium on Networked Systems Design and Implementation (NSDI)*, Cambridge, MA, April 2007.
F.5.18	Anirudh Ramachandran and Nick Feamster. Understanding the Network-Level Behavior of Spammers. In *Proc. Third Symposium on Networked Systems Design and Implementation (NSDI)*, San Jose, CA, May 2006.
F.5.19	Nick Feamster and Hari Balakrishnan. Detecting BGP Configuration Faults with Static Analysis. In *Proc. First Symposium on Networked Systems Design and Implementation (NSDI)*, San Francisco, CA, March 2004.

G. Research Proposals and Grants (Principal Investigator)

1. Approved and Funded

G.1.1 **Demand Characterization and Management for Access Networks**
Sponsor: Cisco Systems
Investigator(s): N. Feamster (PI) and R. Johari
Amount: *$99,766 for 1 year*
Awarded: April 2013

G.1.2 **Improving the Performance and Security of Home Networks with Programmable Home Routers**
Sponsor: Comcast Tech Research Fund
Investigator(s): N. Feamster (PI)
Amount: *$65,000 for 1 year*
Awarded: April 2013

G.1.3 **Personal Information Fusion with In Situ Sensing Infrastructure**
Sponsor: National Science Foundation
Investigator(s): N. Feamster (PI)

Amount: *$75,000 for 1 year.*
Awarded: July 2012

G.1.4 **Characterizing and Exposing Bias in Social and Mainstream Media**
Sponsor: National Science Foundation
Investigator(s): N. Feamster (PI)
Amount: *$175,000 for 1 year.*
Awarded: July 2012

G.1.5 **I-Corps: Helping Users and ISPs Manage Home Networks with BISmark**
Sponsor: National Science Foundation
Investigator(s): N. Feamster (PI)
Amount: *$50,000 for 1 year.*
Awarded: June 2012

G.1.6 **Optimizing Network Support for Cloud Services: From Short-Term Measurements to Long-Term Planning**
Sponsor: National Science Foundation
Investigator(s): N. Feamster (PI), J. Rexford
Amount: *$574,996.00 for 4 years.*
Awarded: April 2012

G.1.7 **Facilitating Free and Open Access to Information on the Internet**
Sponsor: National Science Foundation
Investigator(s): R. Dingledine, N. Feamster (PI), E. Felten, M. Freedman, H. Klein, W. Lee
Amount: *$1,500,000 for 4 years*
Awarded: March 2011

G.1.8 **Measurement Infrastructure for Home Networks**
Sponsor: National Science Foundation
Investigator(s): K. Calvert, W.K. Edwards, N. Feamster (PI), R. Grinter
Amount: *$1,200,000 for 4 years*
Awarded: February 2011

G.1.9 **Monitoring Free and Open Access to Information on the Internet**
Sponsor: Google Focus Grant
Investigator(s): N. Feamster and W. Lee
Amount: *$1,500,000 for 3 years*
Awarded: February 2011

G.1.10 **GENI OpenFlow Campus Buildout**
Sponsor: GENI Project Office
Investigator(s): N. Feamster (PI), Russ Clark
Amount: *$64,675 for 1 year*
Awarded: October 2010

G.1.11 **Architecting for Innovation**
Sponsor: National Science Foundation
Investigator(s): H. Balakrishnan, N. Feamster, B. Godfrey, N. McKeown, J. Rexford, S. Shenker (PI)
Amount: *$200,000 for 1 year*
Awarded: September 2010

G.1.12 **Aster*x: Load-Balancing Web Traffic over Wide-Area Networks**
Sponsor: National Science Foundation
Investigator(s): N. Feamster (PI), Russ Clark

Amount: *$75,000 for 1 year*
Awarded: *August 2010*

G.1.13 **Network-Wide Configuration Testing and Synthesis**
Sponsor: National Science Foundation
Investigator(s): N. Feamster (PI), A. Akella
Amount: *$500,000 for 3 years*
Awarded: *June 2010*

G.1.14 **MEDITA - Multi-layer Enterprise-wide Dynamic Information-flow Tracking & Assurance**
Sponsor: National Science Foundation
Investigator(s): N. Feamster, A. Orso (PI), M. Prvulovic
Amount: *$900,000 for 3 years*
Awarded: *March 2010*

G.1.15 **Campus Network Access and Admission Control with Openflow**
Sponsor: National Science Foundation
Investigator(s): N. Feamster (PI), R. Clark
Amount: *$300,000 for 3 years*
Awarded: *January 2010*

G.1.16 **Studying DNS Traffic Patterns**
Sponsor: Verisign
Investigator(s): N. Feamster
Amount: *$30,000 for 1 year*
Awarded: *November 2009*

G.1.17 **CIFellowship for Cristian Lumezanu**
Sponsor: National Science Foundation
Investigator(s): C. Lumezanu, N. Feamster (PI)
Amount: *$140,000 for 1 year*
Awarded: *November 2009*

G.1.18 **Military Network Protocol**
Sponsor: DARPA Subcontract
Investigator(s): N. Feamster
Amount: *$37,000 for 1 year*
Awarded: *November 2009*

G.1.19 **Botnet Attribution and Removal: From Axioms to Theories to Practice**
Sponsor: Office of Naval Research
Investigator(s): W. Lee (PI), D. Dagon, J. Giffin, N. Feamster, K. Shin, F. Jahanian, M. Bailey, J. Mitchell, G. Vigna, C. Kruegel
Amount: *$7,500,000 for 5 years*
Awarded: *August 2009*

G.1.20 **Taint-based Information Tracking in Networked Systems**
Sponsor: National Science Foundation Trusted Computing Program
Investigator(s): N. Feamster
Amount: *$450,000 for 3 years*
Awarded: *August 2009*

G.1.21 **Towards a Market for Internet Connectivity**
Sponsor: Office of Naval Research
Investigator(s): N. Feamster (PI), R. Johari, V. Vazirani

Amount: *$350,000 for 1 year*
Awarded: March 2009

G.1.22 **Bringing Experimenters and External Connectivity to GENI**
Sponsor: GENI Project Office
Investigator(s): N. Feamster
Amount: *$320,000 for 3 years*
Awarded: September 2008

G.1.23 **Routing Without Recomputation**
Sponsor: Cisco Systems
Investigator(s): N. Feamster
Amount: *$96,019 for 1 year*
Awarded: September 2008

G.1.24 **CLEANSE: Cross-Layer Large-Scale Efficient Analysis of Network Activities to Secure the Internet**
Sponsor: National Science Foundation Cybertrust Program
Investigator(s): W. Lee (PI), N. Feamster and others
Amount: *$1,200,000 for 5 years*
Awarded: September 2008

G.1.25 **Virtual Center for Network and Security Data**
Sponsor: Department of Homeland Security
Investigator(s): N. Feamster
Amount: *$48,000 for 2 years*
Awarded: March 2008

G.1.26 **Sloan Research Fellowship**
Sponsor: Alfred P. Sloan Foundation
Investigator(s): N. Feamster
Amount: *$45,000 for 2 years*
Awarded: February 2008

G.1.27 **Enabling Security and Network Management Research for Future Networks**
Sponsor: National Science Foundation CRI-IAD Program
Investigator(s): N. Feamster (PI), Z. Mao, W. Lee
Amount: *$397,426 for 3 years*
Awarded: February 2008

G.1.28 **SMITE: Scalable Monitoring in the Extreme**
Sponsor: DARPA BAA 07-52: Scalable Network Monitoring
Investigator(s): N. Feamster (PI), W. Lee
Amount: *$250,000 for 2 years*
Awarded: January 2008

G.1.29 **Countering Botnets: Anomaly-Based Detection, Comprehensive Analysis, and Efficient Mitigation**
Sponsor: Department of Homeland Security BAA07-09
Investigator(s): W. Lee (PI), N. Feamster, J. Giffin
Amount: *$1,050,730 for 2 years*
Awarded: January 2008

G.1.30 **Spam Filtering Research**
Sponsor: IBM Faculty Award

Investigator(s): N. Feamster
Amount: *$ 7,500 (unrestricted gift)*
Awarded: June 2007

G.1.31 **SCAN: Statistical Collaborative Analysis of Networks**
Sponsor: National Science Foundation NeTS-NBD Program
Investigator(s): N. Feamster (PI), A. Gray, J. Hellerstein, C. Guestrin
Amount: *$ 95,000 for 3 years.*
Awarded: June 2007

G.1.32 **Towards an Accountable Internet Architecture**
Sponsor: National Science Foundation CyberTrust Program (Team Proposal)
Investigator(s): D. Andersen, H. Balakrishnan, N. Feamster (PI), S. Shenker
Amount: *$ 300,000 for 3 years.*
Awarded: May 2007

G.1.33 **Fish4Phish: Fishing for Phishing in a Large Pond**
Sponsor: AT&T Labs—Research
Investigator(s): N. Feamster (PI), O. Spatscheck, K. van der Merwe
Amount: *Funding for summer intern.*
Awarded: February 2007

G.1.34 **Improving Network Operations with a View from the Edge.**
Sponsor: National Science Foundation CAREER Program
Investigator(s): N. Feamster (PI)
Amount: *$400,000 for 5 years.*
Awarded: January 2007

G.1.35 **Equipment Donation for Network Operations Research**
Sponsor: Intel Corporation
Investigator(s): N. Feamster
Amount: *$30,000*
Awarded: October 2006

G.1.36 **CABO: Concurrent Architectures are Better than One**
Sponsor: National Science Foundation NeTS-FIND Program
Investigator(s): N. Feamster (PI), L. Gao, J. Rexford
Amount: *$ 300,000 for 4 years*
Awarded: June 2006

G.1.37 **Verification and Modeling of Wide-Area Internet Routing**
Sponsor: Cisco Systems University Research Program
Investigator(s): N. Feamster and H. Balakrishnan (PI)
Amount: *$ 95,500 for 1 year.*
Awarded: June 2004

2. Pending

Removed for external version.
    Available upon request.

H.   Research Proposals and Grants (Contributor)

1. Approved and Funded

Removed for external version.

2. Pending

Available upon request.

I. Other

I.0.1 **In-Band, Bottom-Up Support for Network Accountability**
Sponsor: N. Feamster, W. Lee, M. Ahamad
Investigator(s): DARPA Strategic Technology Office
Amount: *White paper / Request for Information.*
Submitted: *February 2007*

I.0.2 **Towards an Accountable Internet Architecture**
Sponsor: D. Andersen, H. Balakrishnan, N. Feamster, S. Shenker
Investigator(s): DARPA Strategic Technology Office
Amount: *White paper / Request for Information.*
Submitted: *February 2007*

J. Research Honors and Awards

2012	**Hesburgh Teaching Fellow**
2012	PRSA Bronze Anvil Award for *Wall Street Journal* Editorial Article
2011	Selected Participant for U.S. National Academy of Engineering Frontiers of Engineering Symposium
2010	John P. Imlay Distinguished Lecture, Georgia Tech
2010	Panelist for NSF/*Discover Magazine* Special Issue on "The New Internet"
2010	*Technology Review* **Top Innovators Under 35**
2010	Georgia Tech Sigma Xi Young Faculty Award
2010	Selected Participant for U.S. National Academy of Science Kavli Frontiers of Science Symposium
2009	Best Paper, *Passive and Active Measurement Conference*
2009	Georgia Tech Sigma Xi Best Undergraduate Research Advisor
2008	**NSF Presidential Early Career Award for Scientists and Engineers (PECASE)**
2008	**Alfred P. Sloan Fellowship**
2008	Georgia Tech College of Computing Outstanding Junior Faculty Research Award
2007	IBM Faculty Award
2007	NSF CAREER Award
2006	Best Student Paper (Advisor), *ACM SIGCOMM* (Premier Networking Conference)
2006	George M. Sprowls honorable mention for best Ph.D. thesis in computer science, MIT
2005	Best Paper, *2nd USENIX Symposium on Networked Systems Design and Implementation*
2002	Best Student Paper, *11th USENIX Security Symposium*
2001	Best Student Paper, *10th USENIX Security Symposium*
2002–2005	NSF Graduate Research Fellow
2001	MIT William A. Martin Memorial Thesis Award for Best EECS Master's Thesis

III. SERVICE

A. Professional Activities

A.1. Memberships and Activities in Professional Societies

Member, ACM Special Interest Group on Data Communications (SIGCOMM)

Member, Assocation for Computing Machinery (ACM)

Member, USENIX Technical Association

A.2. Conference Committee Activities

2014	Program Committee, *ISOC Network and Distributed Security Symposium*
2013	**Program Committee Co-Chair**, *USENIX Symposium on Networked Systems Design and Implementation (NSDI)*
2013	Program Committee, *ACM SIGCOMM*
2013	Program Committee, *ACM SIGCOMM Internet Measurement Conference*
2013	**Poster and Demo Committee Co-Chair**, *ACM SIGCOMM*
2013	Program Committee, *USENIX Workshop on Free and Open Communications on the Internet*
2013	**Co-organizer**, *Boston Freedom in Online Communications (BFOC) Day*
2013	Program Committee, *IEEE Symposium on Security and Privacy*
2013	**Editor**, *IEEE Journal on Network and Systems Management*
2012	**Program Committee Co-Chair**, *ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*
2012	Program Committee, *USENIX Workshop on Hot Topics in Security (HotSec)*
2012	Program Committee, *First Workshop on Systems and Infrastructure for the Digital Home (HomeSys)*
2012	Program Committee, *ACM SIGCOMM Workshop on Medical Communication (MedCOMM)*
2012	Program Committee, *ACM SIGCOMM Workshop on Hot Topics in Networking (HotNets)*
2012	Program Committee, *ACM SIGCOMM Internet Measurement Conference*
2012	Program Committee, *USENIX Workshop on Free and Open Communication on the Internet (FOCI)*
2012	Program Committee, *ACM SIGCOMM*
2012	Program Committee, *IEEE Symposium on Security and Privacy*
2012	Program Committee, *ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*
2012	Program Committee, *ACM SIGCOMM COMSNETS*
2011	**Founder and Chair**, *USENIX Workshop on Free and Open Communication on the Internet*
2011	**Panel Organizer**, *IEEE Computer and Communications Workshop (CCW)*
2011	Program Committee, *ISOC Network and Distributed Security Symposium*
2011	Program Committee, *ACM Conference on Computer and Communication Security*

2011	Program Committee, *IEEE Symposium on Security and Privacy*
2011	Program Committee, *ACM SIGCOMM Workshop on Home Networks (HomeNets)*
2011	Program Committee, *USENIX Workshop on Hot Topics in Management of Internet, Cloud, and Enterprise Networks and Services (HotICE)*
2011	Program Committee *4th USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '11)*
2010	Program Committee, *ACM SIGCOMM Poster and Demo Session*
2010	Program Committee, *ACM SIGCOMM Workshop on Virtualized Infrastructure Systems and Architectures (VISA)*
2010	**Program Committee Co-Chair**, *USENIX Workshop on Internet Network Management (INM/WREN)*
2010	Program Committee, *ACM SIGMETRICS*
2010	Program Committee, *IEEE Symposium on Internet Security and Privacy*
2010	Program Committee, *USENIX Symposium on Networked Systems Design and Implementation (NSDI)*
2010	Program Committee *3rd USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '10)*
2009	Program Committee, *ACM SIGCOMM Workshop on Research on Enterprise Networks (WREN)*
2009	Program Committee, *ACM SIGCOMM Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO)*
2009	Program Committee, *USENIX Technical Conference*
2009	Program Committee, *ACM SIGCOMM Workshop on Economics of Networked Systems (NetEcon)*
2009	Program Committee *2nd USENIX Workshop on Large-Scale Exploits and Emergent Threats (LEET '09)*
2009	**Poster/Demo Co-Chair**, *ACM SIGCOMM*
2009	Program Committee, *ACM SIGMETRICS*
2009	Program Committee, *6th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI)*
2008	Program Committee, *3rd International Workshop on Real Overlays & Distributed Systems*
2008	Program Committee, *ACM SIGCOMM Internet Measurement Conference*
2008	Program Committee, *ACM Conference on Computer and Communications Security (CCS)*
2008	Program Committee, *ACM SIGCOMM*
2008	Program Committee, *ACM SIGMETRICS*
2008	Program Committee, *ACM SIGCOMM Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO)*
2008	Program Committee, *ACM SIGCOMM Workshop on Economics of Networked Systems (NetEcon)*
2008	Program Committee, *17th International World Wide Web Conference* (Security/Privacy Track)

2008	Program Committee, *ACM SIGMETRICS Workshop on Internet Network Management*
2008	Program Committee, *16th IEEE LAN/MAN Workshop*
2007	Program Committee, *3rd Annual CoNext Conference*
2007	Program Committee, *ACM SIGCOMM Workshop on Internet Management (INM)*
2007	Program Committee, *ACM SIGCOMM Student Poster Session*
2007	Program Committee, *ACM SIGMETRICS Workshop on Mining Internet Data (MineNet)*
2007	**Co-Organizer**, DIMACS Workshop Series on Internet Security
2007	Program Committee, *4th Conference on Email and Anti-Spam (CEAS)*
2007	Program Committee, *3rd USENIX Workshop on Steps to Reduce Unwanted Traffic on the Internet (SRUTI)*
2007	Program Committee, *USENIX Technical Conference*
2007	Program Committee, *CoNext*
2007	Program Committee, *16th International World Wide Web Conference* (Security/Privacy Track)
2007	Program Committee Co-Chair, *ACM/USENIX Workshop on Networks meet Databases (NetDB)*
2006–	Program Committee, *North American Network Operators Group (NANOG)*
2006	Organizer, *Workshop on Internet Routing Evolution and Design*
2006	Program Committee, *ACM SIGCOMM Internet Measurement Conference*
2006	**Program Committee Co-Chair**, *Workshop on the Economics of Networked Systems (NetEcon)*
2006	**Program Committee Co-Chair**, *CoNext Student Workshop*
2006	Program Committee, *2nd Annual CoNext Conference*
2006	Program Committee, *ACM SIGCOMM Workshop on Internet Network Management*
2006	Program Committee, *IEEE Symposium on Security and Privacy*
2006	Program Committee, *IEEE Infocom Student Poster Session*
2006	Program Committee, *IEEE International Conference on Internet Surveillance and Protection*

External reviewer for *IEEE/ACM Transactions on Networking*, *SIGCOMM* (2002, 2003, 2004, 2006, 2007), *SOSP* (2001, 2003), *Infocom* (2004, 2006), *HotNets* (2003), *HotOS* (2001), *USENIX Security Symposium* (2002), *ACM Computer Communication Review*, *IEEE Network Magazine*, *IEEE Journal on Selected Areas in Communications*, *Image Communication* (EURASIP), *ASPLOS* (2004), *MobiSys* (2004), *USENIX* (2005, 2006), *NSDI* (2005, 2006), *IPTPS* (2005), *Workshop on Privacy Enhancing Technologies* (2006).

A.3. Workshops and External Courses

Unless otherwise noted, all listed activities are invited speaking invitations for workshops, tutorials, and symposia.

July 2013	African Network Operators Group Tutorial, Lusaka, Zambia
March 2013	**Co-organizer**, *Boston Freedom in Online Communications (BFOC) Day*

August 2012	**Founder and Co-Chair**, *ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, San Francisco, CA
Febuary 2011	**Founder and Co-Chair**, *USENIX Workshop on Free and Open Communications on the Internet (FOCI)*, San Francisco, CA
July 2011	African Network Operators Group Tutorial, Dar es Salaam, Tanzania
Febuary 2011	**Founder and Organizer**, Workshop on Free and Open Communications on the Internet, Atlanta, GA
July 2010	Routing for Cloud Services Tutorial, GENI Engineering Conference 8, San Diego, CA
July 2010	Routing for Cloud Services Tutorial, GENI Engineering Workshop, Princeton, NJ
June 2010	African Network Operators Group Tutorial, Kigali, Rwanda
March 2010	**Co-Organizer**, DIMACS Workshop on Secure Internet Routing, New Brunswick, NJ
June 2009	**Organizer**, NSF Security Driven Architectures Workshop, Arlington, VA
March 2009	Workshop on Re-Architecting the Internet (NetArch), Monte Verita, Switzerland
February 2009	CAIDA Active Internet Measurement Systems (AIMS) Workshop, San Diego, CA
October 2008	Panelist at IEEE CCW, Steamboat Springs, Colorado
October 2008	Panelist at ACM SIGCOMM Internet Measurement Conference, Athens, Greece
June 2008	Google Workshop on Internet Measurement, Mountain View, CA
May 2008	Tutorial at 26th Brazilian Symposium on Computer Networks and Distributed Systems, Rio de Janeiro, Brazil
March 2008	Co-Organizer for DIMACS Workshop on Secure Internet Routing
November 2007	NSF/DARPA/ARO NCDI Workshop, College Park, MD
August 2007	DIMACS Tutorial on Algorithms for Next Generation Networks, New Brunswick, NJ
July 2007	INTIMATE Workshop on Methods and Tools for Network Analysis, Paris, France
May 2007	Workshop on Programmable Routers for Extensible Services of Tomorrow (PRESTO), Princeton, NJ
April 2007	NeXtworking, the Second COST-NSF Workshop on Future Internet, Berlin, Germany
February 2007	GIG Routing and Addressing Workshop, Washington, DC
February 2007	DARPA Workshop on Assurable Global Networking, Washington, DC
December 2006	Next-Generation Internet Workshop, Lisbon, Portugal
September 2006	Clean Slate Network Research Symposium, Cambridge, UK
October 2006	**Co-organizer**, Workshop on Internet Routing Evolution and Design (WIRED), Atlanta, GA
August 2006	Cisco Routing Research Symposium, San Jose, CA
June 2006	ARO-DARPA-DHS Special Workshop on Botnets, Arlington, VA
June 2006	Microsoft Research EdgeNet Workshop, Snoqualmie, WA
June 2006	Microsoft Research "Networking on the Edge" Workshop on Network Management, Seattle, WA
February 2006	NSF Workshop on Theory of Networked Computation, Princeton, NJ
January 2006	Cisco Network Management Summit, San Jose, CA

B. On-Campus Georgia Tech Committees

Spring 2013   Co-Chair, CS Ph.D. Visit Weekend Committee

Fall 2012–Spring 2013 Massive Open Online Masters (MOOMS) Committee

Fall 2011   School of Computer Science Curriculum Committee

Fall 2011   Research, Promotion, and Tenure Committee for Research Scientists

Spring 2010   Faculty Recruiting Committee

Fall 2009   Strategic Planning Committee

Spring 2009–10   Dean Search Committee

Spring 2009   Faculty Recruiting Committee

Spring 2008   Faculty Recruiting Committee

Fall 2006–   Area Coordinator, Networking Area Group

Fall 2006   Co-Organizer, Networking and Telecommunications Group Open House

Spring 2006–   College of Computing Strategic Planning Committee

Spring 2006   Ph.D. Recruiting Weekend Organizing Committee, CSS Division Leader

C. Member of Ph.D. Examining Committees

Ph.D. Thesis Committee

1. Lucas Di Cioccio, Department of Computer Science, University of Paris 6., Fall 2012.
   Principal Advisor: Professor Renata Teixeira.

2. Philippa Gil, Department of Computer Science, University of Toronto., Fall 2012.
   Principal Advisor: Professor Yashar Ganjali.

3. Nan Hua, College of Computing, Georgia Tech., Spring 2012.
   Principal Advisor: Professor Jun Xu.

4. Mehmet Demirci, College of Computing, Georgia Tech., Spring 2012.
   Principal Advisor: Professor Mostafa Ammar.

5. Manos Antonakakis, College of Computing, Georgia Tech., Spring 2012.
   Principal Advisor: Professor Wenke Lee.

6. Walter de Donato, Department of Computer Science, University of Napoli Federico II., Fall 2011.
   Principal Advisor: Professor Antonio Pescape.

7. Tongqing Qiu, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Jim Xu.

8. David Levin, Department of Computer Science, University of Maryland., Fall 2010.
   Principal Advisor: Professor Bobby Bhattacharjee.

9. David Dagon, College of Computing, Georgia Tech., Spring 2010.
   Principal Advisor: Professor Wenke Lee.

10. Junjie Zhang, College of Computing, Georgia Tech., Spring 2010.
    Principal Advisor: Professor Wenke Lee.

11. Amogh Dhamdhere, College of Computing, Georgia Tech, Spring 2009.
    Principal Advisor: Professor Constantine Dovrolis.

12. Guofei Gu, College of Computing, Georgia Tech, Spring 2008.
    Principal Advisor: Professor Wenke Lee.

13. Steve Webb, College of Computing, Georgia Tech, Spring 2008.
    Principal Advisor: Professor Calton Pu.

14. Vibhore Kumar, College of Computing, Georgia Tech, Spring 2008.
    Principal Advisor: Professor Karsten Schwan.

15. Prahlad Fogla, College of Computing, Georgia Tech, Spring 2007.
    Principal Advisor: Professor Wenke Lee.

16. Srinivasan Seetharaman, College of Computing, Georgia Tech, Spring 2007.
    Principal Advisor: Professor Mostafa Ammar.

17. Sridhar Srinivasan, College of Computing, Georgia Tech., Spring 2006.
    Principal Advisor: Professor Ellen Zegura.

18. Xenofontas Dimitropoulos, Electrical and Computer Engineering, Georgia Tech, Spring 2006.
    Principal Advisor: Professor George Riley.

19. Qi Zhao, College of Computing, Georgia Tech, Spring 2006.
    Principal Advisor: Professor Jim Xu.

20. Ruomei Gao, College of Computing, Georgia Tech., Fall 2005.
    Principal Advisor: Professors Ellen Zegura and Constantine Dovrolis.

Other — Question writer for Ph.D. Qualifying Exam

1. Saamer Akhshabi, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Constantine Dovrolis.

2. Bilal Anwer, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Nick Feamster.

3. Saeideh Bakhshi, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Constantine Dovrolis.

4. Hyojoon Kim, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Nick Feamster.

5. Samantha Lo, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Mostafa Ammar.

6. Aemen Lodhi, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Constantine Dovrolis.

7. Yogesh Mundada, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Nick Feamster.

8. Shruti Sanadhya, College of Computing, Georgia Tech., Spring 2011.
   Principal Advisor: Professor Raghupathy Sivakumar.

9. Sam Burnett, College of Computing, Georgia Tech., Spring 2010.
   Principal Advisor: Professor Nick Feamster.

10. Shuang Hao, College of Computing, Georgia Tech., Spring 2010.
    Principal Advisor: Professor Nick Feamster.

11. Partha Kanuparthy, College of Computing, Georgia Tech., Spring 2010.
    Principal Advisor: Professor Constantine Dovrolis.

12. Maria Konte, College of Computing, Georgia Tech., Spring 2010.
    Principal Advisor: Professor Nick Feamster.

13. Robert Lychev, College of Computing, Georgia Tech., Spring 2010.
    Principal Advisor: Professor Nick Feamster.

14. Yogesh Mundada, College of Computing, Georgia Tech., Spring 2010.
    Principal Advisor: Professor Nick Feamster.

15. Cong Shi, College of Computing, Georgia Tech., Spring 2010.
    Principal Advisor: Professor Mostafa Ammar.

16. Yiyi Huang, College of Computing, Georgia Tech., Spring 2008.
    Principal Advisor: Professor Nick Feamster.

17. Anirudh Ramachandran, College of Computing, Georgia Tech., Spring 2008.
    Principal Advisor: Professor Nick Feamster.

18. Murtaza Motiwala, College of Computing, Georgia Tech., Spring 2009.
    Principal Advisor: Professor Nick Feamster.

19. Vytautas Valancius, College of Computing, Georgia Tech., Spring 2009.
    Principal Advisor: Professor Nick Feamster.

20. Mehmet Demirci, College of Computing, Georgia Tech., Spring 2009.
    Principal Advisor: Professor Mostafa Ammar.

21. Ahmed Mansy, College of Computing, Georgia Tech., Spring 2009.
    Principal Advisor: Professor Mostafa Ammar.

22. Tonqing Qiu, College of Computing, Georgia Tech., Spring 2009.
    Principal Advisor: Professor Jim Xu.

23. Nan Hua, College of Computing, Georgia Tech., Spring 2009.
    Principal Advisor: Professor Jim Xu.

24. Chuck Zhao, College of Computing, Georgia Tech., Spring 2009.
    Principal Advisor: Professor Jim Xu.

25. Mukarram Bin Tariq, College of Computing, Georgia Tech., Spring 2007.
    Principal Advisor: Professor Nick Feamster.

26. Zhenshun Zhang, College of Computing, Georgia Tech., Spring 2007.
    Principal Advisor: Professor Raghupathy Sivakumar.

27. Yang Chen, College of Computing, Georgia Tech., Spring 2006.
    Principal Advisor: Professor Jim Xu.

D. Consulting, Advisory, and Other External Appointments

1. Technical Advisory Board, Guavus, Inc. `http://www.guavus.com/`

2. Technical Advisory Board, Anchor Intelligence, Inc. `http://www.fraudwall.net/`

3. Consultant, Damballa, Inc. `http://www.anchorintelligence.com/`

IV. NATIONAL AND INTERNATIONAL RECOGNITION

A. Invited Conference Session Chair

August 2012	Panel organizer, *ACM SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN)*, Helsinki, Finland
August 2012	Session chair, *ACM SIGCOMM Workshop on Measurements Up the Stack (W-MUST)*, Helsinki, Finland
October 2011	Session organizer and chair, *IEEE Computer and Communications Workshop (CCW)*, Hyannis, MA
April 2010	Session chair, *ACM/USENIX Networked Systems Design and Implementation (NSDI)*, San Jose, CA
October 2008	Session chair, *ACM SIGCOMM HotNets-VII Workshop*, Calgary, Alberta, Canada
October 2008	Session chair, *ACM SIGCOMM Internet Measurement Conference*, Athens, Greece
March 2008	Session organizer, Security for the Future Internet, *NSF Cybertrust PI Meeting*, Arlington, VA
June 2007	Session chair, Network Virtualization, *NSF NeTS-FIND PI Meeting*, Arlington, VA
June 2006	Session chair, Mechanism Design and Networking, *First Workshop on the Economics of Networked Systems (NetEcon06)*, Ann Arbor, MI

B. Patents

March 2007	"Method and System for Detecting and Responding to Attacking Networks", U.S. Patent Application # 11/538,212

C. Editorial and Reviewer Work for Technical Journals and Publishers

External reviewer for *IEEE/ACM Transactions on Networking*

External reviewer for *IEEE Journal on Selected Areas in Communications*

External reviewer for *IEEE Computer Networks*

External reviewer for *ACM Transactions on Information and Systems Security*

V. OTHER CONTRIBUTIONS

A. Seminar Presentations

A.0.1	Measuring Broadband Performance in South Africa. In *African Network Operators Group*, Lusaka, Zambia, June 2013.
A.0.2	The Battle for Control of Online Communications. In *Georgetown Computer Science Colloquium*, Washington, DC, April 2013.
A.0.3	SDX: A Software Defined Internet Exchange. In *Open Network Summit*, Santa Clara, CA, April 2013.
A.0.4	Broadband Internet Performance: A View from the Gateway. In *National Academy of Engineering Cybersecurity Symposium*, Atlanta, GA, March 2013.

A.0.5   SDX: A Software Defined Internet Exchange. In *IRTF Software Defined Networking Research Group*, Orlando, Florida, March 2013.

A.0.6   The Battle for Control of Online Communications. In *UC Berkeley TRUST Seminar*, Berkeley, CA, March 2013.

A.0.7   Exposing Inconsistent Web Search Results with Bobble. In *CAIDA Active Internet Measurement Systems (AIMS) Workshop*, San Diego, CA, February 2013.

A.0.8   The Battle for Control of Online Communications. In *AT&T Research Colloquium*, New York, NY, November 2012.

A.0.9   The Battle for Control of Online Communications. In *George Washington University Computer Science Colloquium*, Washington, DC, November 2012.

A.0.10   Software Defined Networking. In *IETF Plenary Session*, Vancouver, British Columbia, Canada, August 2012.

A.0.11   Lithium: Event-Driven Network Control. In *IRTF Software Defined Networking Research Group*, Vancouver, British Columbia, Canada, August 2012.

A.0.12   Lithium: Event-Driven Network Control. In *GENI CIO Workshop*, Boston, MA, July 2012.

A.0.13   Lithium: Event-Driven Network Control. In *2nd Open Networking Summit*, Santa Clara, CA, March 2012.

A.0.14   Broadband Internet Performance: A View from the Gateway. In *IEEE 802.15 Working Group*, Atlanta, GA, June 2012.

A.0.15   The Battle for Control of Online Communications. In *Microsoft Research Colloquium*, Seattle, WA, April 2012.

A.0.16   The Battle for Control of Online Communications. In *University of Wisconsin Computer Science Department Colloquium*, Madison, WI, April 2012.

A.0.17   The Battle for Control of Online Communications. In *Google Tech Talk*, Seattle, WA, April 2012.

A.0.18   The Battle for Control of Online Communications. In *University of Washington Computer Science Department Colloquium*, Seattle, WA, April 2012.

A.0.19   The Battle for Control of Online Communications. In *University of Maryland Computer Science Department Colloquium*, College Park, MD, April 2012.

A.0.20   The Battle for Control of Online Communications. In *New York University Computer Science Department Colloquium*, New York, NY, March 2012.

A.0.21   The Battle for Control of Online Communications. In *Columbia University Computer Science Department Colloquium*, New York, NY, February 2012.

A.0.22   The Battle for Control of Online Communications. In *Boston University Electrical Engineering Department Colloquium*, Boston, MA, February 2012.

A.0.23   The Battle for Control of Online Communications. In *Brown University Computer Science Department Colloquium*, Providence, RI, February 2012.

A.0.24   The Battle for Control of Online Communications. In *University of Michigan Computer Science Department Colloquium*, Ann Arbor, MI, February 2012.

A.0.25   The Battle for Control of Online Communications. In *University of Illinois Computer Science Department Colloquium*, Urbana-Champaign, IL, February 2012.

A.0.26   How Can We Make Home Networks Easier to Manage? In *Homework Summit*, Cambridge, UK, January 2012.

A.0.27   The Battle for Control of Online Communications. In *Max Planck Institute for Software Systems Department Colloquium*, Saarbrucken, Germany, November 2011.

A.0.28   Software Defined Network Management. In *12th GENI Engineering Conference (GEC)*, Kansas City, MO, November 2011.

A.0.29   Managing the Home Network. In *Broadband 2020 Symposium*, Atlanta, GA, October 2011.

A.0.30   Software Defined Network Management. In *1st Open Network Summit*, Stanford, CA, October 2011.

A.0.31   Why IP Alerts May Require New Technology. In *George Mason University Law School IEP Panel*, Arlington, VA, October 2011.

A.0.32   Open Information Access: Old Problems, Emerging Challenges. In *IEEE Computer Communications Workshop (CCW)*, Hyannis, MA, October 2011.

A.0.33   Getting Students' Hands Dirty with Clean-Slate Networking. In *ACM SIGCOMM Network Education Workshop (NetEd)*, Toronto, Ontario, Canada, August 2011.

A.0.34   Reputation Systems Based on Network-Level Behavior. In *Colloquium at Verisign, Inc.*, Reston, VA, July 2011.

A.0.35   Broadband Internet Performance: A View from the Gateway. In *African Network Operators Group Meeting*, Dar es Salaam, Tanzania, June 2011.

A.0.36   Broadband Internet Performance: A View from the Gateway. In *Google Tech Talk*, New York, NY, May 2011.

A.0.37   Adding Traffic Control to Your GENI Slice with BGP Mux. In *10th GENI Engineering Conference (GEC)*, San Juan, Puerto Rico, March 2011.

A.0.38   Passive and Active Measurements at the Network Frontier (The home). In *12th Passive and Active Measurement Conference (PAM)*, Atlanta, GA, March 2011.

A.0.39   Broadband Internet Performance: A View from the Gateway. In *Internet2 Members' Meeting*, Clemson, SC, February 2011.

A.0.40   Broadband Internet Performance: A View from the Gateway. In *UCSD/CAIDA Active Internet Measurement Symposium (AIMS)*, San Diego, CA, February 2011.

A.0.41   Challenges and Opportunities for Tomorrow's Networks. In *Princeton University Department of Computer Science Colloquium*, Princeton, NJ, February 2011.

A.0.42   SwitchBlade: A Platform for Rapid Deployment of Network Protocols on Programmable Hardware. In *Bell Labs Symposium*, Murray Hill, NJ, February 2011.

A.0.43   Challenges and Opportunities for Tomorrow's Networks. In *ACM SIGCOMM CoNext Keynote Address*, Philadelphia, PA, November 2010.

A.0.44   What Factors Affect Home Network Performance. In *Cisco/Intel Home Network Services Summit*, San Jose, CA, November 2010.

A.0.45   Challenges and Opportunities for Tomorrow's Networks. In *John P. Imlay Distinguished Lecture*, Atlanta, GA, October 2010.

A.0.46   SwitchBlade: A Platform for Rapid Deployment of Network Protocols on Programmable Hardware. In *ACM SIGCOMM*, New Delhi, India, September 2010.

A.0.47   Outsourcing Home Network Security. In *ACM SIGCOMM Workshop on Home Networking (HomeNets)*, New Delhi, India, September 2010.

A.0.48   Challenges and Opportunities in Home Network Measurement. In *ACM SIGCOMM Workshop on Home Networking (HomeNets)*, New Delhi, India, September 2010. Panel Discussion.

A.0.49   Wide-Area Routing for Distributed Services. In *GENI Experimenters Workshop*, Princeton, NJ, June 2010.

A.0.50   Wide-Area Routing for Distributed Services: Tutorial. In *GENI Engineering Conference 8*, San Diego, CA, July 2010.

A.0.51   Network-Level Spam and Scam Defenses. In *African Network Operators Group*, Kigali, Rwanda, June 2010.

A.0.52   SwitchBlade: A Platform for Rapid Deployment of Network Protocols on Programmable Hardware. In *National Institute of Information and Communications Technology*, Tokyo, Japan, June 2010.

A.0.53   Network-Level Spam and Scam Defenses. In *National Institute of Information and Communications Technology*, Tokyo, Japan, June 2010.

A.0.54   Wide-Area Routing for Distributed Services. In *University of Tokyo*, Tokyo, Japan, June 2010.

A.0.55   SwitchBlade: A Platform for Rapid Deployment of Network Protocols on Programmable Hardware. In *Stanford Networking Seminar*, Stanford, CA, June 2010.

A.0.56   Network-Level Spam and Scam Defenses. In *MIT Computer Science Department Colloquium*, Cambridge, MA, May 2010.

A.0.57   Network-Level Spam and Scam Defenses. In *Harvard University Computer Science Department Colloquium*, Cambridge, MA, April 2010.

A.0.58   Network-Layer Support for Secure Routing and Access Control. In *DIMACS Workshop on Secure Routing*, New Brunswick, NJ, March 2010.

A.0.59   Detecting General Network Neutrality Violations with Causal Inference. In *ACM SIGCOMM CoNext*, Rome, Italy, December 2009.

A.0.60   Dynamic Access Control with Resonance. In *DIMACS Workshop on Network Management*, New Brunswick, NJ, November 2009.

A.0.61   Network-Level Spam and Scam Defenses. In *Princeton University Computer Science Department Colloquium*, Princeton, NJ, October 2009.

A.0.62   SNARE: Spatio-Temporal Network-Level Automated Reputation Engine. In *Message Anti-Abuse Working Group (MAAWG) Plenary Session*, Philadelphia, PA, October 2009.

A.0.63   A Platform for Building Flexible, Fast Virtual Networks on Commodity Hardware. In *Cisco Routing Architecture Workshop*, San Jose, CA, October 2009.

A.0.64   Network-Level Spam and Scam Defenses. In *EPFL Summer Research Institute*, Lausanne, Switzerland, June 2009.

A.0.65   Bringing Experimenters and External Connectivity to GENI. In *GENI Measurement Workshop*, Madison, WI, June 2009.

A.0.66   Network-Level Spam Defenses. In *University of Wisconsin Computer Science Department Colloquium*, Madison, WI, April 2009.

A.0.67   Trellis: A Platform for Building Flexible, Fast Virtual Networks on Commodity Hardware. In *NSF NeTS FIND PI Meeting*, Arlington, VA, April 2009.

A.0.68   Dynamics of Online Scam Hosting Infrastructure. In *Passive and Active Measurement Conference*, Seoul, Korea, April 2009.

A.0.69   Demonstration of Topology Creation Service and BGP Session Multiplexer. In *4th GENI Engineering Conference*, Miami, Florida, April 2009.

A.0.70   Network Security Research. In *Georgia Tech College of Computing Wine & Cheese Talk*, Atlanta, GA, April 2009.

A.0.71   Network-Level Spam Defenses. In *Cisco Systems Security Seminar*, San Jose, CA, March 2009.

A.0.72   Network-Level Spam Defenses. In *Stanford University Networking Seminar*, Stanford, CA, March 2009.

A.0.73   Network-Level Spam Defenses. In *University of North Carolina Computer Science Department Colloquium*, Chapel Hill, NC, March 2009.

A.0.74   Dynamics of Online Scam Hosting Infrastructure. In *CAIDA Active Internet Measurement Systems (AIMS) Workshop*, San Diego, CA, February 2009.

A.0.75   Outsourcing Network Security with Programmable Hardware. In *GENI Security Workshop*, Davis, CA, April 2009.

A.0.76   Spam, Phishing, and Online Scams:
A View from the Network-Level. In *University of Toronto Computer Science Department Colloquium*, Toronto, Ontario, Canada, December 2008.

A.0.77   Detecting and Diagnosing Network Performance Degradations with Statistical Methods. In *IPAM Workshop on New Mathematical Frontiers in Network Multi-Resolution Analysis*, Los Angeles, CA, October 2008.

A.0.78   Fighting Spam, Phishing, and Online Scams at the Network Level. In *Asian Internet Engineering Conference*, Bangkok, Thailand, November 2008.

A.0.79   Multiplexing BGP Sessions with a BGP Session Multiplexer. In *3rd GENI Engineering Conference*, Palo Alto, CA, October 2008.

A.0.80   Towards an Accountable Internet Architecture. In *The IEEE 22nd Annual Computer Communications Workshop*, Steamboat Springs, Colorado, October 2008.

A.0.81   Network-Level Spam Filtering. In *IPAM Workshop on Applications of Internet MRA to Cyber-Security*, Los Angeles, CA, October 2008.

A.0.82   Spam, Phishing, and Online Scams:
A View from the Network-Level. In *Yahoo Tech Talk*, Sunnyvale, CA, August 2008.

A.0.83	Path Splicing. In *EPFL Summer Research Institute*, Lausanne, Switzerland, July 2008.
A.0.84	Spam, Phishing, and Online Scams: A View from the Network-Level. In *Google Tech Talk*, Mountain View, CA, June 2008. `http://www.youtube.com/watch?v=IBPg9Lyta3A`.
A.0.85	Making Tomography Practical: Scalable Network Monitoring for Fault Diagnosis. In *DIMACS Workshop on Network Tomography*, New Brunswick, NJ, May 2008.
A.0.86	Network-Based Spam Filtering. In *Internet2 Members Meeting*, Arlington, VA, April 2008.
A.0.87	Path Splicing. In *Carnegie Mellon University Computer Science Seminar*, Pittsburgh, PA, April 2008.
A.0.88	BGP, Bogons, and Spam. In *DIMACS Workshop on Secure Internet Routing*, New Brunswick, NJ, March 2008.
A.0.89	Can Great Research Be Taught? Independent Research with Cross-Disciplinary Thinking and Broader Impact. In *ACM SIGCSE Technical Symposium on Computer Science Edudation (SIGCSE)*, Portland, OR, March 2008.
A.0.90	Path Splicing. In *Colgate University Computer Science Seminar*, Hamilton, NY, November 2007.
A.0.91	Path Splicing. In *Cornell University Computer Science Symposium*, Ithaca, NY, November 2007.
A.0.92	Path Splicing. In *Bell Labs Networking Seminar*, Murray Hill, NJ, November 2007.
A.0.93	Usage-Based DHCP Lease-Time Optimization. In *ACM/USENIX Internet Measurement Conference*, San Diego, CA, October 2007.
A.0.94	Network-Based Spam Filtering. In *University of Southern California Computer Science Symposium*, Los Angeles, CA, October 2007.
A.0.95	Path Splicing with Network Slicing. In *Georgia Tech Algorithms and Randomness Center (ARC) Symposium*, Atlanta, GA, October 2007.
A.0.96	Internet Availability. In *DIMACS Tutorial on Algorithms for Next-Generation Networks*, New Brunswick, NJ, August 2007.
A.0.97	Towards an Accountable Internet Architecture. In *INTIMATE Workshop on Methods and Tools for Network Analysis*, Paris, France, July 2007.
A.0.98	Path Splicing with Network Slicing. In *UCL Networking Seminar*, Louvain La Neuve, Belgium, July 2007.
A.0.99	Composing Virtual Networks. In *Third NSF-NeTS FIND PI Meeting*, Arlington, VA, June 2007.
A.0.100	Path Splicing with Network Slicing. In *UCSD Networking and Systems Seminar*, San Diego, CA, June 2007.
A.0.101	Path Splicing with Network Slicing. In *NANOG 40*, Bellevue, WA, June 2007.
A.0.102	AGORA: A Market for Internet Connectivity. In *Workshop on Programmable Routers for Extensible Services of Tomorrow*, Princeton, NJ, May 2007.
A.0.103	Path Splicing with Network Slicing. In *NeXtworking 2007, the Second COST-NSF Workshop on Future Internet*, Berlin, Germany, April 2007.

A.0.104	Towards an Accountable Internet Architecture. In *DARPA GIG Routing and Addressing Workshop*, Arlington, VA, February 2007.
A.0.105	Towards an Accountable Internet Architecture. In *DARPA STO Assurable Global Networking Workshop*, Arlington, VA, February 2007.
A.0.106	Improving Network Operations with a View from the Edge. In *National Science Foundation CyberTrust PI Meeting*, Atlanta, GA, January 2007.
A.0.107	Network Virtualization for Experimentation and Profit. In *University of Michigan Networking Seminar*, Ann Arbor, MI, December 2006.
A.0.108	Network Virtualization for Experimentation and Profit. In *Stanford Networking Seminar*, Stanford, CA, November 2006.
A.0.109	Network Architecture Research. In *National Science Foundation NeTS-FIND Informational Meeting*, Reston, VA, November 2006.
A.0.110	Network Virtualization. In *National Science Foundation NeTS-FIND PI Meeting*, Reston, VA, November 2006.
A.0.111	Understanding the Network-Level Behavior of Spammers. In *Johns Hopkins Security and Applied Research Lab Seminar*, Baltimore, MD, October 2006.
A.0.112	Revealing Botnet Membership with DNSBL Counter-Intelligence. In *NANOG 38*, St. Louis, MO, October 2006.
A.0.113	VINI: A Virtual Network Infrastructure. In *Centre national de la recherche scientifique (CNRS)*, Paris, France, September 2006.
A.0.114	Botnets and Spam. In *Seminar: Laboratoire d'informatique de Paris 6*, Paris, France, September 2006.
A.0.115	Network Virtualization and Graph Embedding. In *Georgia Tech Algorithms and Randomness Center Seminar*, Atlanta, GA, September 2006.
A.0.116	Cabo: Concurrent Architectures are Better than One. In *Cisco Internet Routing Research Symposium*, San Jose, CA, August 2006.
A.0.117	Botnets and Spam. In *ARO-DARPA-DHS Special Workshop on Botnets*, Arlington, VA, June 2006.
A.0.118	Understanding the Network-Level Behavior of Spammers. In *CS 548: Internet and Distributed Systems Seminar*, Stanford, CA, June 2006.
A.0.119	Understanding the Network-Level Behavior of Spammers. In *NANOG 37*, San Jose, CA, June 2006.
A.0.120	Campus and Personal Network Troubleshooting. In *Microsoft Research EdgeNet 2006*, Snoqualmie, WA, June 2006.
A.0.121	Infranet: Circumventing Web censorship and surveillance. In *Georgia Tech NTG Seminar*, Atlanta, GA, April 2006.
A.0.122	Filtering: Sharpening Two Sides of a Double-Edged Sword. In *Interz0ne 5*, Tucker, GA, March 2006.
A.0.123	Theory of Measurement and Monitoring. In *Workshop on the Theory of Networked Computation*, Princeton, NJ, February 2006.

A.0.124   Challenges and Opportunities in Internet Data Mining. In *Cisco Network Management Summit*, San Jose, CA, February 2006.

A.0.125   BGP Spamming Agility. In *NANOG 36*, Dallas, TX, February 2006.

A.0.126   Spam Forensics. In *IEEE Security and Privacy Crystal Ball Workshop*, Berkeley, CA, February 2006.

A.0.127   Network Security. In *Georgia Tech Information Security Center Lunch*, Atlanta, GA, January 2006.

A.0.128   Geographic Locality of IP Prefixes. In *NANOG 35*, Los Angeles, CA, October 2005.

A.0.129   rcc demonstration. In *NANOG 35*, Los Angeles, CA, October 2005.

A.0.130   Detecting BGP Configuration Faults with Static Analysis. In *Princeton University Systems Reading Group*, Princeton, NJ, October 2005.

A.0.131   Proactive Techniques for Correct and Predictable Internet Routing. In *University of Cambridge Symposium*, England, United Kingdom, June 2005.

A.0.132   Proactive Techniques for Correct and Predictable Internet Routing. In *Hewlett-Packard Laboratories*, Palo Alto, CA, October 2005.

A.0.133   Open problems in BGP anomaly detection. In *CAIDA Workshop on Internet Signal Processing*, San Diego, CA, November 2004.

A.0.134   On end-to-end path failures and routing instability. In *CAIDA Workshop on Internet Signal Processing*, San Diego, CA, November 2004.

A.0.135   Wide-area network data and analysis at MIT. In *CAIDA Internet Measurement Data Catalog Workshop*, San Diego, CA, June 2004.

A.0.136   Verifying wide-area routing configuration. In *NANOG 31*, San Francisco, CA, May 2004.

A.0.137   Verifying wide-area routing configuration with **rcc**. AT&T Labs; Florham Park, NJ, February 2004.

A.0.138   Verifying wide-area routing configuration with **rcc**. In *NYU Systems Reading Group*, New York, NY, February 2004.

A.0.139   A systematic approach to BGP configuration checking. In *NANOG 29*, Chicago, IL, October 2003.

A.0.140   Characterizing path failures: Location, characterization, correlation. In *CAIDA Internet Statistics, Metrics, and Analysis Workshop*, Leiden, The Netherlands, October 2002.

A.0.141   Infranet: Circumventing Web censorship and surveillance. In *Harvard Kennedy School of Government Seminar*, Cambridge, MA, November 2002.

A.0.142   Infranet: Circumventing Web censorship and surveillance. Hewlett-Packard Laboratories; Palo Alto, CA, August 2002.

A.0.143   Infranet: Circumventing Web censorship and surveillance. In *Carnegie Mellon University SDI Seminar*, Pittsburgh, PA, April 2002.

A.0.144   Controlling the impact of BGP policy changes on IP traffic. In *NANOG 25*, Toronto, Ontario, Canada, June 2002.