

# Justine Marie Sherry

justines@andrew.cmu.edu  
<http://www.justinsherry.com>  
+1 206 552 0332

---

## RESEARCH INTERESTS

Computer networks: middleboxes, Internet-scale systems, measurement, Internet architecture, cloud computing, congestion control

---

## EDUCATION

### PhD, Computer Science

University of California, Berkeley, December 2016  
Advisor: Sylvia Ratnasamy

### Master of Science, Computer Science

University of California, Berkeley, December 2012

### Bachelor of Science, Computer Science & Bachelor of Arts, International Studies

University of Washington, March 2010

Cum laude and with college honors in Computer Science

*Studied abroad Summer 2007 at Universidad de San Andrés in Buenos Aires, Argentina*

---

## HONORS AND AWARDS

- UC Berkeley David J. Sakrison Memorial Prize, 2016 *awarded annually for 'a truly outstanding piece of research as documented in written form'*
  - ACM SIGCOMM Best Student Paper Award, 2015 *for Rollback Recovery for Middleboxes*
  - National Science Foundation Graduate Research Fellowship, 2011 *awarded nationally; 'recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines'*
  - Microsoft Research Graduate Women's Scholarship, 2011
  - University of Washington Dept. of CSE Best Senior Thesis Award, 2010 *'to recognize the honors student(s) who writes the most outstanding senior thesis in a given year'*
  - University of Washington Dept. of CSE Undergraduate Service Award, 2010
  - USENIX NSDI Best Paper Award, 2010 *for Reverse Traceroute*
  - UC Berkeley Chancellor's Fellowship for Graduate Study, 2010 *'awarded to exceptional applicants who also advance the Regents goals for diversification of the academy'*
  - Computing Research Association Outstanding Female Undergraduate Researcher Award, 2010 *awarded annually to one male and one female student nationally; 'recognizes undergraduate students in North American universities who show outstanding research potential in an area of computing research.'*
-

## PUBLICATIONS

### Refereed Conference

“MBark: Securely Outsourcing Middleboxes to the Cloud.” C. Lan, **J. Sherry**, R. A. Popa, S. Ratnasamy. In *Proc. USENIX NSDI*, 2016.

“Rollback Recovery for Middleboxes.” **J. Sherry**, P. Gao, S. Basu, A. Panda, A. Krishnamurthy, C. Macciocco, M. Manesh, J. Martins, S. Ratnasamy, L. Rizzo, S. Shenker. In *Proc. ACM SIGCOMM*, 2015. **Awarded Best Student Paper.**

“BlindBox: Deep Packet Inspection over Encrypted Traffic.” **J. Sherry**, C. Lan, R. A. Popa, S. Ratnasamy. In *Proc. ACM SIGCOMM*, 2015.

“Silo: Predictable Message Completion Time in the Cloud.” K. Jang, **J. Sherry**, H. Ballani, and T. Moncaster. In *Proc. ACM SIGCOMM*, 2015.

“Recursively Cautious Congestion Control.” R. Mittal, **J. Sherry**, S. Ratnasamy, S. Shenker. In *Proc. USENIX Network Systems Design and Implementation (NSDI)*, 2014.

“Low Latency via Redundancy.” A. Vulimiri, P. B. Godfrey, R. Mittal, **J. Sherry**, S. Ratnasamy, S. Shenker. In *Proc. ACM CoNEXT*, 2013.

“Making Middleboxes Someone Else’s Problem: Network Processing as a Cloud Service.” **J. Sherry**, S. Hasan, C. Scott, A. Krishnamurthy, S. Ratnasamy, V. Sekar. In *Proc. ACM SIGCOMM*, 2012.

“Resolving IP Aliases with Prespecified Timestamps.” **J. Sherry**, E. Katz-Bassett, M. Pimenova, H.V. Madhyastha, T. Anderson, A. Krishnamurthy. In *Proc. ACM Internet Measurement Conference*, 2010.

“Reverse traceroute.” E. Katz-Bassett, H.V. Madhayastha, V. Adhikari, C. Scott, **J. Sherry**, P. van Wesep, A. Krishnamurthy, T. Anderson. In *Proc. USENIX Network Systems Design and Implementation (NSDI)*, 2010. **Awarded Best Paper.**

### Journals & Magazines

“Helping Conference Attendees Better Understand Research Presentations.” E. Katz-Bassett, **J. Sherry**, T.Y. Huang, M. Kazandjieva, C. Partridge, F. Dogar. In *Communications of the ACM*, Volume 59, Issue 9 (August 2016).

“Introducing Research for Practice” P. Bailis, S. Peter, **J. Sherry**. *Communications of the ACM*, Volume 59, Issue 9 (August 2016).

“Introducing Research for Practice” P. Bailis, **J. Sherry**, S. Peter. *ACM Queue*, Volume 14, Issue 2 (March-April 2016).

“Open Network Interfaces for Carrier Networks.” A. Panda, M. McCauley, A. Toontoonchian, **J. Sherry**, T. Koponen, S. Ratnasamy, S. Shenker. In *ACM Computer Communications Review*, Volume 46, Issue 1 (January 2016).

### Refereed Workshop

“How to improve your network performance by asking your provider for worse service.” R. Mittal, **J. Sherry**, S. Ratnasamy, S. Shenker. In *Proc. ACM HotNets*, 2013.

“Meddle: Middleboxes for Increased Transparency and Control of Mobile Traffic.” A. Rao, D. Choffnes, **J. Sherry**, A. Legaut, A. Krishnamurthy, and W. Dabbous. CoNEXT 2012 Student Workshop. **Awarded Best Paper.**

### **Theses**

“Middleboxes as a Cloud Service.” **J. Sherry**. Doctoral Dissertation. UC Berkeley, Department of Electrical Engineering and Computer Sciences, Technical Report No. UCB/EECS-2016-165. Chair: Sylvia Ratnasamy. Committee: Scott Shenker, Arvind Krishnamurthy, John Chuang.

“Future Architectures for Middlebox Processing Services on the Internet and in the Cloud.” **J. Sherry**. Masters Report. UC Berkeley, Department of Electrical Engineering and Computer Sciences, Technical Report No. UCB/EECS-2012-240. Advisor: Sylvia Ratnasamy. Second Reader: Scott Shenker.

“Applications of the IP Timestamp Option to Internet Measurement.” **J. Sherry**. Honors Thesis. Computer Science & Engineering, University of Washington, March 2010. Advisors: Tom Anderson and Arvind Krishnamurthy. **Awarded Best Senior Thesis.**

“Unlocking the Potential of Cell Phones,” **J. Sherry**. In *From the Bottom Up: Rethinking United States Development Assistance*, eds. S. Arbogast, A. O’Leary, W. Latsch. Task Force Report. Jackson School of International Studies, University of Washington, March 2009, pp. 300-321.

### **Posters**

“Rollback Recovery for Middleboxes.” **J. Sherry**, P. Gao, S. Basu, A. Panda, A. Krishnamurthy, C. Maciocco, M. Manesh, J. Martins, S. Ratnasamy, L. Rizzo, S. Shenker.

- at NSF Early Career Workshop 2015 (Arlington, VA).

- at Rising Stars in EECS Workshop 2014 (Berkeley, CA).

“CLINT: Cross-Layer Debugging for Software Defined Networks.” C. Scott, A. Wundsam, **J. Sherry**, and S. Shenker. Poster at Clean Slate / ONRC CTO Summit 2010 (Stanford, CA).

“Internet Measurements with Prespecified Timestamps.” **J. Sherry**, M. Pimenova, E. Katz-Bassett, H. Madhyastha, A. Krishnamurthy, T. Anderson. Poster at NSDI 2010 (San Jose, CA).

### **Technical Reports & Manuscripts**

“BlindBox: Deep Packet Inspection over Encrypted Traffic.” **J. Sherry**, C. Lan, R. A. Popa, S. Ratnasamy. Cryptology ePrint Archive 2015/264.

“Silo: Predictable Message Completion Time in the Cloud.” K. Jang, **J. Sherry**, H. Ballani, and T. Moncaster. Microsoft Research, Technical Report No. MSR-TR-2013-95.

“A Dual-Channel Approach to Protocol Design in the Presence of Middleboxes.” S. Wang, **J. Sherry**, S. Han. UC Berkeley, Department of Electrical Engineering and Computer Sciences, Technical Report No. UCB/EECS-2013-205

“Low Latency via Redundancy.” A. Vulimiri, P. B. Godfrey, R. Mittal, **J. Sherry**, S. Ratnasamy, S. Shenker. arXiv:1306.3707

“Netcalls: End Host Function Calls to Network Traffic Processing Services.” **J. Sherry**, D. C. Kim, S. S. Mahalingam, A. Tang, S. Wang, S. Ratnasamy. UC Berkeley, Department of Electrical Engineering and Computer Sciences, Technical Report No. UCB/EECS-2012-175

“A Survey of Enterprise Middlebox Deployments.” **J. Sherry** and S. Ratnasamy. UC Berkeley, Department of Electrical Engineering and Computer Sciences, Technical Report No. UCB/EECS-2012-24

### Talks

“Middleboxes as a Cloud Service.”

- at Duke University (Durham, NC), Department of Electrical and Computer Engineering, February 12 2016
- at University of Pennsylvania (Philadelphia, PA), Department of Computer and Information Science, February 18 2016.
- at University of Waterloo (Waterloo, Canada), Cheriton School of Computer Science, February 22 2016.
- at California Institute of Technology (Pasadena, CA), Department of Computing and Mathematical Sciences, February 29 2016.
- at Cornell University (Ithaca, NY), Department of Computer Science, March 3 2016.
- at University of California, San Diego (La Jolla, CA), Department of Computer Science and Engineering, March 7 2016.
- at Georgia Institute of Technology (Atlanta, GA), School of Computer Science, March 10 2016.
- at University College London (London, UK), Department of Computer Science, March 14 2016.
- at Harvard University (Cambridge, MA), School of Engineering and Applied Sciences, March 21 2016.
- at Carnegie Mellon University (Pittsburgh, PA), School of Computer Science, March 28 2016.
- at New York University (New York, NY), Computer Science Department, March 31 2016.
- at University of Michigan (Ann Arbor, MI), Computer Science and Engineering Division, April 4 2016.
- at Stanford University (Palo Alto, CA), Department of Computer Science, April 11 2016.
- at University of Texas at Austin (Austin, TX), Department of Computer Science, April 18 2016.
- at Instituto Superior Técnico (Lisbon, Portugal), April 28, 2016
- at University of Southern California (Los Angeles, CA), June 25, 2016

“My Computer Science Heroes.” Wikipedia High School Women’s WOW! Editing Group (Berkeley, CA), December 5 2015.

“Middleboxes como servicio en la nube.” *English Title: “Middleboxes as a Cloud Service.* Spring School on Networks (Santiago, Chile), November 9 2015. **Keynote Presentation.** <https://youtu.be/GH6kuFu5808>

“BlindBox: Deep Packet Inspection over Encrypted Traffic.”

- at ACM SIGCOMM 2015 (London, UK), Aug 19 2015. [youtu.be/l5amXlf-aqw](https://youtu.be/l5amXlf-aqw)
- at Stanford-Berkeley Annual Security Meetup (San Francisco, CA), April 10 2015.

“Rollback Recovery for Middleboxes.”

- at ACM SIGCOMM 2015 (London, UK), Aug 19 2015. [youtu.be/yKRXCJ0wrCw](https://youtu.be/yKRXCJ0wrCw)

- at Rising Stars in EECS Workshop (Berkeley, CA), November 3 2014.
- at Open Networking Research Center Annual Event (Palo Alto, CA), October 14 2014.

“A Ten-Minute Introduction to Middleboxes.” at ACM SIGCOMM Topic Preview Session (London, UK), Aug 17, 2015.

“Making Middleboxes Someone Else’s Problem: Network Processing as a Cloud Service.”

- at Industry-Academia Partnership Cloud Workshop (Berkeley, CA), February 27 2015.
- at ETH: Swiss Federal Institute of Technology (Zurich, Switzerland), System Security Research Lab, November 18 2014.
- at University College London (London, UK), Department of Electrical Engineering, January 18 2013.
- at ACM SIGCOMM (Helsinki, Finland), August 14 2012 [youtu.be/gUUHE4wZPrw](http://youtu.be/gUUHE4wZPrw)
- at University of Cambridge (Cambridge, UK), Computer Laboratory, August 2 2012.
- at Microsoft Research, Cambridge (Cambridge, UK), August 9 2012.

“What Do Computer Scientists Do – and Why?” at Sedbergh Junior School (Sedbergh, UK), June 15 2012.

“Resolving IP Aliases with Prespecified Timestamps.” at ACM Internet Measurement Conference (Melbourne, Australia), November 2 2010.

“The Internet Measurement Toolbox.” at University of Puget Sound (Tacoma, WA), Department of Math and Computer Science, April 12 2010.

## INDUSTRY

### Research Intern

5/13-8/13

Intel Research - Hillsboro, OR

- Designed FTMB, an architecture for fault-tolerant middleboxes, in collaboration with Intel researchers. Our system allows middleboxes to recover from failure in under 200ms while incurring latency overheads on the order of tens of  $\mu s$  under normal operation (2-3 orders of magnitude better than previous systems). Recovery ensures that no state is lost and no connections are reset due to the outage.

### Research Intern

5/12-8/12

Microsoft Research - Cambridge, UK

- Interned with Dr. Hitesh Ballani studying datacenter network performance guarantees. Developed network calculus inspired algorithms for Silo, a datacenter management controller for multitenant clouds which provides strong network performance bounds in terms of both bandwidth and latency.

### Software Development Engineer Intern

6/08-9/08, 6/09-9/09

Amazon - Seattle, WA

- *Amazon Fresh, 2009*: Developed a web interface and backend management system to streamline customer product requests. Researched and deployed a Ruby on Rails web platform for marketing tools, and implemented a targeted marketing system as the first feature of the new marketing platform.

- *Digital Vendor Services, 2008*: Constructed a web application frontend to Amazon Digital sales data. Aggregated copyright and sales records on public domain texts for publication on the Kindle.
- 

## TEACHING

### Undergraduate Research Mentor

11/11-present

UC Berkeley - Berkeley, CA

- Guided undergraduate students as they designed and implemented independent research projects:
  - *Daniel Kim, EECS 2013*, “An IDS for Mobile Devices” (to Symantec)
  - *Seshadri Mahalingam, EECS 2013*, “An Adaptive Interdomain Firewall” (to Trifacta)
  - *Steve Wang, EECS 2014*, “TCP With Forward Error Correction” (to PhD Program @ Boston University)
  - *Amy Tang, L&S CS 2015*, “A Network View of Mobile Phone Security” (to Facebook)
  - *Soumya Basu, EECS 2015*, “Reliability for Intrusion Detection Services” (to PhD Program @ Cornell University, NSF Graduate Research Fellow)

### Graduate Student Instructor

8/11-12/11, 8/13-12/13

UC Berkeley - Berkeley, CA

- *GSI, Computer Communication Networks, 2011 & 2013*: Instructed weekly recitation sections of 35 junior and senior undergraduate students on core networking topics. Designed, assigned, and graded a class project for over 200 students on implementing routing protocols with a networking simulator. Assisted instructor in developing and grading exams.

### Teaching Assistant

9/06-6/08

University of Washington - Seattle, WA

- *Head Teaching Assistant, Programming I, 2008*: Mediated conflicts between students and teaching assistants, led ‘grading parties,’ and provided clarification on grading policies.
  - *Teaching Assistant, Programming II, 2007*: Taught and graded twice-weekly recitation sections on CS2 topics including linked lists, binary trees, stacks and queues, recursion, and sorting algorithms.
  - *Teaching Assistant, Programming I, 2006-2007*: Taught and graded weekly recitation sections on CS1 topics including basic object-oriented programming, loops, conditionals, and simple data structures.
- 

## COMMUNITY

### Service

Peer Counselor, EECS Peers Program, 2013–present

Topic Preview Co-Chair, ACM SIGCOMM 2015

Student Reviewer, EECS Admissions Committee, 2013-2014

Faculty Liaison, UC Berkeley Computer Science Graduate Student Association, 2013-2014

Chair, UW ACM-W Student Chapter, 2009-2010

Vice Chair, UW ACM Student Chapter, 2008-2009

### Reviews

Technical Program Committee:

- Spring School on Networks (2015)
  - Passive and Active Measurements (2017)
  - Symposium on SDN Research (2017)
  - ACM SIGCOMM (2017)
- Reviewer, ACM SIGCOMM Computer Communications Review, 2013, 2014  
Reviewer, IEEE Communications, 2013  
Reviewer, ACM/IEEE Transactions on Networking, 2012, 2013, 2015
- 

## REFERENCES

**Prof. Sylvia Ratnasamy**

Assistant Professor  
*Electrical Engineering & Computer Science*  
University of California, Berkeley  
[sylvia@eecs.berkeley.edu](mailto:sylvia@eecs.berkeley.edu)

**Prof. Scott Shenker**

Professor  
*Electrical Engineering & Computer Science*  
University of California, Berkeley  
[shenker@icsi.berkeley.edu](mailto:shenker@icsi.berkeley.edu)

**Prof. Arvind Krishnamurthy**

Associate Professor  
*Computer Science and Engineering*  
University of Washington  
[arvind@cs.washington.edu](mailto:arvind@cs.washington.edu)

**Dr. Richard Uhlig**

Director and Intel Fellow  
Systems Software Research  
Intel Corporation  
[richard.a.uhlig@intel.com](mailto:richard.a.uhlig@intel.com)