Justine Marie Sherry

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RESEARCH INTERESTS

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

EDUCATION

PhD, Computer Science
University of California, Berkeley, expected May 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 Presentions." E. Katz-Bassett, **J. Sherry**, T.Y. Huang, M. Kazandjieva, C. Partridge, F. Dogar. In *Communications of the ACM*, *to appear*.

"Research for Practice: Middleboxes and NFV." **J. Sherry**. *ACM Queue*, Volume 14, Issue 2 (June 2, 2016). **Invited Article**.

"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

"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. Kristhnamurthy, 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/GH6kuIu5808

"BlindBox: Deep Packet Inspection over Encrypted Traffic."

- at ACM SIGCOMM 2015 (London, UK), Aug 19 2015. 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
- 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
- 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 μs 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, 2016)
– Passive and Active Measurements (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

Prof. Arvind Krishnamurthy
Associate Professor
Computer Science and Engineering
University of Washington
arvind@cs.washington.edu

Prof. Scott Shenker
Professor
Electrical Engineering & Computer Science
University of California, Berkeley
shenker@icsi.berkeley.edu

Dr. Richard Uhlig
Director and Intel Fellow
Systems Software Research
Intel Corporation
richard.a.uhlig@intel.com