A. Identifying Data

Name: Keith Winstein
Date: September 14, 2018
Title: Assistant Professor of Computer Science and, by courtesy, of Electrical Engineering

B. Academic History

1.	Ph.D. (computer science)	Massachusetts Institute of Technology	June 2014
2.	Electrical Engineer	Massachusetts Institute of Technology	February 2014
3.	M.Eng. in Elec. Eng. and Comp. Sci.	Massachusetts Institute of Technology	February 2005
4.	B.S. in Elec. Eng. and Comp. Sci.	Massachusetts Institute of Technology	June 2004

C. Employment Record

1.	Assistant Professor of Computer Science	Stanford University	Oct. 2014 to present
2.	Postdoctoral Associate	Mass. Inst. of Technology	June 2014 to Oct. 2014
3.	V.P. of Product Management	Ksplice, Inc.	Dec. 2009 to July 2011
4.	Staff Reporter	The Wall Street Journal	Jan. 2007 to Dec. 2009

D. Professional Activities

	Activity	*Organization/event*
1.	Program-committee member	NSDI 2019
2.	Reviewer	ACM *Transactions on Storage* (2018-)
3.	Program-committee member	SIGCOMM 2018
4.	Workshop organizer	NSF Workshop "Toward a Research Agenda for Cloud 3.0" (Jan. 2018)
5.	Program-committee member	NSDI 2018
6.	Program-committee member	HotNets 2017
7.	External reviewer	IMC 2017
8.	Program-committee member	SIGCOMM 2017
9.	Judge	ACM Student Research Competition at SIGCOMM 2017
10.	Mentor	N2Women Workshop at SIGCOMM 2017
11.	Program-committee member	CoNEXT 2016
12.	Program-committee member	SIGCOMM 2016
13.	Program-committee member	CoNEXT 2015
14.	Program-committee member	SIGCOMM 2015
15.	External reviewer	NSDI 2015
16.	Program-committee member	HotNets 2014
17.	Reviewer	ACM *Computer Communications Review* (2013-)
18.	Reviewer	IEEE/ACM *Transactions on Networking* (2013-)
19.	External reviewer	NSDI 2013
20.	Program-committee member	SIGCOMM 2012 workshop on MedCOMM
21.	Conference scribe coordinator	SIGCOMM 2017, SIGCOMM 2016, SIGCOMM 2015, HotNets 2014, HotNets 2013 and NSDI 2013

E. University and Departmental Service

Within computer science department:

1.	PhD admissions committee	2018-19
2.	Curriculum committee	2018-19
3.	Prof. of CS Education search committee	2017-18
4.	PhD admissions committee	2017-18
5.	Curriculum committee	2017-18
6.	"Student CS Experience in 2027" committee	2017-18
7.	PhD admissions committee	2016-17
8.	Curriculum committee	2016-17
9.	Lecturer search committee	2016-17
10.	PhD admissions committee	2015-16
11.	Curriculum committee	2015-16
12.	PhD admissions committee	2014-15

Outside computer science department:

1.	Advisory committee, Stanford Cyber Initiative	2017-

F. Awards and Honors

	Award	*Conferred*
1.	Usenix ATC Best Paper Award (for "Pantheon: the training ground for Internet congestion-control research")	2018
2.	Usenix NSDI Community Award (for "The Design, Implementation, and Deployment of a System to Transparently Compress Hundreds of Petabytes of Image Files for a File-Storage Service")	2017
3.	Google Faculty Research Award	2017
4.	Facebook Faculty Award	2016
5.	Google Faculty Research Award	2015
6.	ACM SIGCOMM Doctoral Dissertation Award	2015
7.	MIT George M. Sprowls Award for outstanding PhD thesis in CS	2014
8.	IRTF Applied Networking Research Prize	2014

G. Bibliographical Information

Publications

Customary practice for order of authors in computer systems and networking: students are named in decreasing order of contribution, followed by advisors.

Refereed Journal Publications

1. A. Sivaraman, K. Winstein, P. Varley, S. Das, J. Ma, A. Goyal, J. Batalha and H. Balakrishnan, "Protocol Design Contests," *Computer Communication Review* 44, 3 (July 2014), 38–44.

Refereed Conference/Symposia Proceedings

1. K. Alpernas, C. Flanagan, **S. Fouladi**, L. Ryzhyk, M. Sagiv, T. Schmitz and K. Winstein, "Secure Serverless Computing Using Dynamic Information Flow Control," to appear at *ACM Object-Oriented Programming, Systems, Languages & Applications (OOPSLA)*, Boston, Mass., 2018.
2. **F. Yan**, **J. Ma**, **G. Hill**, D. Raghavan, **R. Wahby**, P. Levis and K. Winstein, Pantheon: the training ground for Internet congestion-control research, *USENIX Annual Technical Conference*, Boston, Mass., 2018.
3. **S. Fouladi**, **J. Emmons**, **E. Orbay**, **C. Wu**, **R. Wahby** and K. Winstein, "Salsify: low-latency network video through tighter integration between a video codec and a transport protocol," *USENIX Symposium on Networked Systems Design and Implementation (NSDI '18)*, Renton, Wash., 2018.
4. **D. Kogan**, **H. Stern**, A. Tolbert, D. Mazières and K. Winstein, "The Case For Secure Delegation," *ACM Workshop on Hot Topics in Networks (HotNets '17)*, Palo Alto, Calif., 2017.
5. M. Schapira and K. Winstein, "Congestion-Control Throwdown," *ACM Workshop on Hot Topics in Networks (HotNets '17)*, Palo Alto, Calif., 2017.
6. Z. Niu, H. Xu, D. Han, P. Cheng, Y. Xiong, G. Chen and K. Winstein, "Network Stack as a Service in the Cloud," *ACM Workshop on Hot Topics in Networks (HotNets '17)*, Palo Alto, Calif., 2017.
7. Y. Lu, A. Cavallaro, C. Crump, G. Friedland and K. Winstein, "Privacy Protection in Online Multimedia," *ACM Multimedia '17*, 2017.
8. J. Wilson**, R. Wahby**, H. Corrigan-Gibbs**,** D. Boneh, P. Levis and K. Winstein, "Trust but Verify: Auditing the Secure Internet of Things," *Annual International Conference on Mobile Systems, Applications, and Services (MobiSys '17)*, Niagara Falls, N.Y., 2017.
9. **S. Fouladi**, **R. Wahby**, **B. Shacklett**, K. Balasubramaniam, **W. Zeng**, R. Bhalerao, A. Sivaraman, G. Porter and K. Winstein, "Encoding, Fast and Slow: Low-Latency Video Processing Using Thousands of Tiny Threads," *USENIX Symposium on Networked Systems Design and Implementation (NSDI '17)*, Boston, Mass., 2017.
10. D. Horn, K. Elkabany, C. Lesniewski-Laas and K. Winstein, "The Design, Implementation, and Deployment of a System to Transparently Compress Hundreds of Petabytes of Image Files for a File-Storage Service," *USENIX Symposium on Networked Systems Design and Implementation (NSDI '17)*, Boston, Mass., 2017.

11. A. Levy, J. Hong, L. Riliskis, P. Levis and K. Winstein, "Beetle: Flexible Communication for Bluetooth Low Energy," *Annual International Conference on Mobile Systems, Applications, and Services (MobiSys '16)*, Singapore, 2016.
12. R. Netravali, A. Sivaraman, S. Das, A. Goyal, K. Winstein, J. Mickens and H. Balakrishnan, "Mahimahi: Accurate Record-and-Replay for HTTP," *USENIX Annual Technical Conference*, Santa Clara, Calif., 2015.
13. A. Sivaraman, K. Winstein, P. Thaker and H. Balakrishnan, "An Experimental Study of the Learnability of Congestion Control," *ACM SIGCOMM 2014*, Chicago, Ill., 2014.
14. A. Sivaraman, K. Winstein, S. Subramanian and H. Balakrishnan, "No Silver Bullet: Extending SDN to the Data Plane," *ACM Workshop on Hot Topics in Networks (HotNets '13)*, College Park, Md., 2013.
15. K. Winstein and H. Balakrishnan, "TCP ex Machina: Computer-Generated Congestion Control," *ACM SIGCOMM 2013*, Hong Kong, China, 2013.
16. K. Winstein, A. Sivaraman and H. Balakrishnan, "Stochastic Forecasts Achieve High Throughput and Low Delay over Cellular Networks," *USENIX Symposium on Networked Systems Design and Implementation (NSDI '13)*, Lombard, Ill., 2013.
17. K. Winstein and H. Balakrishnan, "Mosh: An Interactive Remote Shell for Mobile Clients," *USENIX Annual Technical Conference*, Boston, Mass., June 2012.
18. K. Winstein and H. Balakrishnan, "End-to-End Transmission Control by Modeling Uncertainty about the Network State," *ACM Workshop on Hot Topics in Networks (HotNets '11), Cambridge, Mass., 2011*.

Non-refereed Publications

1. K. Winstein, "Introducing the 'right to eavesdrop on your things,'" *The Agenda*, Politico, 2015.
2. K. Winstein and H. Balakrishnan, "Mosh: A State-of-the-Art Good Old-Fashioned Mobile Shell," *;login: magazine*, Usenix Assoc., 2012.
3. R. Riemann and K. Winstein, "Improving 802.11 Range with Forward Error Correction," *MIT CSAIL A.I. Memo 2005-004*, 2003.

Non-refereed pre-print servers

1. H. Corrigan-Gibbs and K. Winstein, "Some of the Math in the November 8, 2014 Draft of 'Challenging the Randomness of Panel Assignment in the Federal Courts of Appeals,' Including the Bottom-Line Statistical Analysis, is Incorrect," SSRN #2526494, Nov. 17, 2014.

Presentations

Invited Plenary Talks and Distinguished Lectures

1. Keynote, *Bay Area Security Research Summit*, San Francisco, Calif., April 8, 2016.

Other Invited Presentations

1. "The Good, the Bad, and the Ugly of ML for Networked Systems," *Microsoft Research Faculty Summit*, Renton, Wash., Aug. 1, 2018.
2. "And the networks and the codecs shall lie down together…," *Facebook Inc.,* Menlo Park, Calif., Aug. 10, 2017.
3. "The Internet of Things: Promise and Peril," *Association of Corporate Patent Counsel Summer Meeting*, Park City, Utah, June 27, 2017.
4. "And the networks and the codecs shall lie down together…," *Google Inc.*, Mountain View, Calif., May 22, 2017.
5. "Recent advances in networked video systems," *Netflix Inc.*, Los Gatos, Calif., April 10, 2017.
6. "The case for a richer interface between video and networking parts of the stack," *Google Networking Research Summit*, Sunnyvale, Calif., Feb. 8, 2017.
7. "Encoding, Fast and Slow: Low Latency Video Processing Using Thousands of Tiny Threads," *Amazon Web Services,* Seattle, Wash., Dec. 5, 2016.
8. "Robustness in the Large, and in the Small," *CITP Research Conference on Security and Privacy for the Internet of Things*, Princeton University, Princeton, N.J., Oct. 21, 2016.
9. "Encoding, Fast and Slow: Low Latency Video Processing Using Thousands of Tiny Threads," *Google Inc.,* Mountain View, Calif., Sept. 28, 2016.
10. "TCP ex Machina," *Nokia machine learning workshop*, Sept. 26, 2016.
11. "Transport Architectures for the Developing World," *Microsoft Research Faculty Summit*, Seattle, Wash., July 14, 2016.
12. "Deprogramming Gender Bias" (panelist), *Medallia workshop*, Palo Alto, Calif., Nov. 5, 2015.
13. "Transport Architectures for an Evolving Internet," *Network Architecture Geeks Conference 2015*, Aptos, Calif., Oct. 22, 2015.
14. "Lazy Networking for Lousy Networks," *Google Inc.*, Mountain View, Calif., July 7, 2015.
15. "TCP ex Machina: Computer-Generated Congestion Control," *ExCape summer school on software synthesis*, Massachusetts Institute of Technology, Cambridge, Mass., June 26, 2015.
16. "Transport Architectures for an Evolving Internet," *Netflix Inc.*, Los Gatos, Calif., October 16, 2014.

Contributed Conference Presentations

1. "Congestion-Control Throwdown" (with M. Schapira), *ACM Workshop on Hot Topics in Networks (HotNets '17)*, Palo Alto, Calif., Dec. 1, 2017.
2. "Privacy Protection in Online Multimedia" (panelist), *ACM Multimedia 2017*, Mountain View, Calif., Oct. 24, 2017.
3. Topic Preview lecture for "Up the Stack" session, *SIGCOMM 2017*, Los Angeles, Calif., Aug. 21, 2017.
4. "Emoji are Great. Unicode is a Bad Way to Encode Them," *Emojicon '16*, San Francisco, Calif., Nov. 6, 2016.
5. "The Pantheon of Congestion Control," *Internet Congestion Control Research Group,* IETF 96, Berlin, Germany, July 21, 2016.

6. "receive_generation field in KeyUpdate," *Transport Layer Security working group*, IETF 96, Berlin, Germany, July 19, 2016.
7. "Is your fridge judging you? Tales from the Internet of Things," *SXSW*, Austin, Texas, March 15, 2016.

Department Seminars

1. "Tiny functions for codecs, protocols, compilation, and (maybe) soon everything," *VMware*, Palo Alto, Calif., June 18, 2018.
2. "Tiny functions for codecs, protocols, compilation, and (maybe) soon everything," *Tsinghua University computer science seminar*, Beijing, China, June 11, 2018.
3. "Tiny functions for codecs, compilation, and (maybe) soon everything," *Brown University computer science seminar*, Providence, R.I., May 4, 2018.
4. "Tiny functions for codecs, compilation, and (maybe) soon everything," *University of Wisconsin-Madison computer sciences seminar*, Madison, Wisc., April 20, 2018.
5. "Tiny functions for codecs, compilation, and (maybe) soon everything," *University of Washington computer science seminar*, Seattle, Wash., April 13, 2018.
6. "Functions for codecs, compilation, and (maybe) soon everything," *Distinguished Lecture Series*, Microsoft Research, Redmond, Wash., April 12, 2018.
7. "Tiny functions for codecs, compilation, and (maybe) soon everything," *Stanford Platform Lab Seminar*, Stanford, Calif., Feb. 27, 2018.
8. "Tiny functions for codecs, compilation, and (maybe) soon everything," *Stanford EE380 seminar*, Stanford, Calif., Feb. 7, 2018.
9. "Tiny functions for codecs, compilation, and (maybe) soon everything," *U.S. Berkeley RISE seminar*, Berkeley, Calif., Jan. 25, 2018.
10. "Trust but Verify: Auditing Secure Internet of Things Devices," *Secure Internet of Things Project workshop*, Stanford, Calif., Dec. 4, 2017.
11. "Tiny functions for codecs, compilation, and (maybe) soon everything," *MIT CSAIL seminar*, Cambridge, Mass., Nov. 27, 2017.
12. "Tiny functions for codecs, compilation, and (maybe) soon everything," *Stanford E.E. faculty lunch*, Stanford, Calif., Oct. 30, 2017.
13. "Tiny functions for codecs, compilation, and (maybe) soon everything," *NYU Courant Computer Science Colloquium*, New York, N.Y., October 10, 2017.
14. "And the networks and the codecs shall lie down together…," *Hebrew University Networking Summer*, Hebrew University, Jerusalem, Israel, June 22, 2017.
15. "Debate: SGX will make IoT applications more secure and safer" (with Dan Boneh), *Secure Internet of Things Project retreat,* Santa Cruz, Calif., June 14, 2017.
16. "Granular computing for low-latency compression and compilation," *Stanford Platform Lab retreat*, Aptos, Calif., June 8, 2017.
17. "Encoding, Fast and Slow: Low Latency Video Processing Using Thousands of Tiny Threads," *Stanford computer science department retreat*, Santa Cruz, Calif., Oct. 15, 2016.
18. "How We Learned to Stop Worrying and Love Middleboxes / Smart IoT Gateways," *Secure Internet of Things Project retreat*, Half Moon Bay, Calif., June 28, 2016.

19. “ExCamera: a one-second video encoder,” *Stanford Platform Lab retreat,* Santa Cruz, Calif., June 3, 2016.
20. “Resolved: Owners should be able to eavesdrop on what their devices are saying about them” (with Robert Szewczyk), *Secure Internet of Things Project retreat*, Half Moon Bay, Calif., July 23, 2015.
21. “Lazy Networking for Lousy Networks,” *University of Waterloo*, Waterloo, Canada, October 14, 2014.

Patents

Patents Issued

1. D. Horn, K. Elkabany and K. Winstein, “Digital image recompression,” U.S. Patent No. 9,832,475 (issued Nov. 28, 2017).
2. D. Horn, K. Elkabany and K. Winstein, “Techniques for image recompression,” U.S. Patent No. 9,712,830 (issued July 18, 2017).

Patents under consideration

1. D. Horn, K. Elkabany and K. Winstein, “Digital image recompression,” U.S. Patent Application No. 2018/0146199 (published May 24, 2018).

Students

PhD students

Current PhD Student
Sadjad Fouladi
Anticipated date of graduation: 2020

Current PhD Student
Riad S. Wahby (co-advised by David Mazières)
Anticipated date of graduation: 2020

Current PhD Student
Francis Yan (co-advised by Philip Levis)
Anticipated date of graduation: 2020

Current PhD Student
John Emmons (co-advised by Silvio Savarese)
Anticipated date of graduation: 2021

Current PhD Student

Dmitry Kogan (co-advised by David Mazières)
Anticipated date of graduation: 2021
Current PhD Student
Elizabeth Izhikevich (co-advised by Matei Zaharia)
Anticipated date of graduation: 2023

Former PhD Student
Gregory Hill
On leave starting: 2017

Masters students supervised (with publications)

Former
Jestin Ma
Expected date of graduation: 2019

Former
Henri Stern
Expected date of graduation: 2018

Former
Emre Orbay
Expected date of graduation: 2018

Undergraduate students supervised (with publications)

Former
Brennan Shacklett
Expected date of graduation: 2018

Former
William Zeng
Expected date of graduation: 2018

High-school students supervised (with publications)

Former
Catherine Wu (Saratoga High School)
Expected date of graduation: 2019