Hakim Weatherspoon, PhD

Professor
Department of Computer Science
427 Gates Hall
Cornell University
Ithaca, NY 14853

(607) 254-1257 (office)
hweather@cs.cornell.edu
http://www.cs.cornell.edu/~hweather
Citizenship: United States

EDUCATION:

Ph.D. in Computer Science. October 2006.
University of California, Berkeley – Berkeley, CA.
Design and Evaluation of Distributed Wide-Area On-line Archival Storage Systems.
Archival system that stores data in a global, durable, verifiable, and self-maintainable manner.
Advisor: John D. Kubiatowicz.

Bachelor Degree in Computer Engineering; Minor – Math: June 1999.
University of Washington – Seattle, WA.

RELATED EXPERIENCE:

Research

CORNELL UNIVERSITY
- Professor — Ithaca, NY, Computer Science Department 2021 – present
- Co-Director for the Cornell Institute for Digital Agriculture (CIDA) 2023 – present
- Associate Director for the Cornell Institute for Digital Agriculture (CIDA) 2018 - 2023
- Associate Dean for Diversity and Inclusion – Computing and Information Science (CIS) 2024, 2020
- Associate Professor — Ithaca, NY, Computer Science Department 2015 - 2021
- Assistant Professor — Ithaca, NY, Computer Science Department 2008 - 2015
- Research Associate 2006 - 2008

Networking and distributed systems. Reliability, security, and performance of Internet-scale systems.

EXOSTELLAR, INC. http://exostellar.io
- Co-founder and Chief Scientist 2023 – present
- Co-founder, President, and Chief Executive Office 2018-2023

Exostellar creates a new cloud-native application container architecture that is efficient, fast and secure.

UNIVERSITY OF WASHINGTON
- Visiting Professor — Seattle, WA, Allen School of Computer Science and Engineering 2021 - 2022

UNIVERSITY OF CAMBRIDGE
- Visiting Scholar — Cambridge UK, Computer Laboratory 2015 - 2016

MICROSOFT RESEARCH, CAMBRIDGE
- Visiting Researcher — Cambridge, UK, Systems and Networking Group 2015 - 2016

UNIVERSITY OF CALIFORNIA, BERKELEY
- PhD Candidate/Graduate Student Researcher – Berkeley, CA, CS Department. 1999 - 2006

Design of a global utility infrastructure to provide continuous access to persistent information.

IBM
- Researcher – San Jose, CA, Almaden Research Center. Summer 2002

Surveyed Journaling File Systems for scalable cluster-scale storage system solutions

INTEL CORPORATION 1995-2001
Researcher – Berkeley, CA Intel Research Lab Summer 2001
Implemented the OceanStore Archival Layer as a set of event-driven stages separated by queues.
OceanStore is a global-scale data store being developed at UC Berkeley.
The Archival Layer is responsible for the persistence of data.

Consulting

Futurewei 2019-2021
Consultant – Santa Clara, CA, Cloud Division.
Provided expert knowledge for cloud-based systems

Nirvanix 2012-2013
Consultant – Bolder, CO, Storage Division.
Provided expert knowledge for cloud storage based on erasure-codes

EMC 2009-2010
Consultant – Cambridge, MA, Atmos Online group.
Provided expert knowledge for Atmos Online Geoprotect product based on erasure-codes and storage

Teaching

CORNELL UNIVERSITY 2007-present
Instructor – Ithaca, NY, Computer Science Department.
Taught graduate course – Advanced Systems, CS 6410. Fall 2024,19,18,17,16,13,11,10 and 09
Course broadly examines systems research in its many manifestations:
Operating systems, file systems, distributed systems, etc.

Designed and taught graduate course–Advanced Distributed Storage Systems, CS 6464. Spring 2009
Course broadly examines distributed storage systems in its many manifestations:
Global-scale enterprises and cloud computing to peer-to-peer, ad hoc, and home networks, etc.

Designed and taught graduate course–High Perf Sys and Networking, CS 5413. Spring 2017, Fall 2014
Course broadly examines high performance systems and networking:
Systems and networks built from commodity-off-the-shelf components like modern datacenters
that provide platforms for cloud and other online services

Taught upper division undergraduate Operating Systems, CS 4410. Fall 2008 and Spring 2007
Taught course, supervised teaching assistants and graders.
Created homework, midterms, and final.

Taught undergrad Computer System Organization and Programming, CS 3410. Spr 2024,20,19,18,14,13,12,11
Taught course, supervised teaching assistants and graders.
Created homework, midterms, and final.

RESEARCH INTERESTS:

Network and distributed systems. Cloud Computing, Cloud Storage Systems. Low-Power, Large Scale, File Systems and Storage Systems. Fault-Tolerant Distributed Systems. Distributed Storage Systems. Peer-to-Peer Systems. Routing Overlays.

FELLOWSHIPS/ HONORS / AWARDS:

- Univ of Washington Alumni Diamond Award (2024)
- Cornell Faculty Award for Excellence in Research, Teaching and Service through Diversity (2022)
- Microsoft Investigator Fellowship (2020)
- Black Engineer of the Year, Modern Day Leader (2009)
- IBM Faculty Award (2009)
- Cornell, Provost Postdoc Fellow (2007-08)

- Most Influential Paper, Oceanstore, ACM ASPLOS (2018)
- Cornell Univ, Eng. Teaching Excellence Award (2018)
- Univ of Washington, Alumni Achievement Award (2017)
- Cornell Univ, Diversity Programs in Engineering (DPE) Persons of the Month (2017)
- Univ of Cambridge, Visiting Scholar (2015-2016)
- Kavli Fellow, National Academy of Sciences (2014)
- Zellman Warhaft Commitment to Diversity (2014)
- Rising Star Award, SOSP Diversity Workshop (2013)
- Intel Early Career Honor Program (2012)
- Alfred P. Sloan Research Fellow (2011)
- NSF CAREER (2011)
- DARPA Computer Science Study Panel (2011), a Dept of Defense (DoD) young investigator award
- NetApp Faculty Fellowship Award (2010)
- Intel PhD Foundation Fellowship (2005-06)
- ACM Tapia, Best Poster Award (2003)
- Intel Masters Apprenticeship (1999-2001)
- Intel Minority Engr Schr Prgrm (1997-1999)
- Intel Honors Internship Prgrm (1999-2006)
- Rhodes Scholar Finalist (1998)
- Fellow: Society of Black Engineers (1997)
- Torch Bearer: NSBE (1997-2002)
- Undergraduate Scholar Award (1995-1999)
- Microsoft Technical Scholar Award (1999)
- NASA Space Grant Award (1996-1999)
- Pac-10 All-Academic Team Football (1998)
- U. of Wash., Football Player (1995-1999)

PROGRAM COMMITTEES

- Steering Committee for ACM SIGOPS/SIGMOD Symposium on Cloud Computing (SOCC) 2017-2024
- Steering Committee for USENIX Operating Systems Design and Implementation (OSDI) 2022-2024
- Steering Committee for USENIX File and Storage Technologies (FAST) 2019-2023
- Steering Committee for USENIX Annual Technical Conference (ATC) 2018-2024
- General Chair for ACM/IEEE Architectures for Networking and Communication Systems (ANCS) 2018
- General Chair for ACM SIGOPS/SIGMOD Symposium of Cloud Computing (SOCC) 2017
- Co-PC Chair for USENIX Networked Systems Design and Implementation (NSDI) 2026
- Co-PC Chair for USENIX Operating Systems Design and Implementation (OSDI) 2022
- Co-PC Chair for USENIX File and Storage Technologies (FAST) 2019
- Co-PC Chair for USENIX Annual Technical Conference (ATC) 2016
- Co-PC Chair for ACM SIGOPS/SIGMOD Symposium of Cloud Computing (SOCC) 2013
- Co-PC Chair for USENIX Hot Topics in System Dependability (HotDep) 2010
- Co-PC Chair for Large-Scale Distributed Systems and Middleware (LADIS) 2009
  LADIS 2009 inspired and helped to create SOCC
- USENIX Symposium on Operating Systems Design and Implementation (OSDI) 2024,2022,2018, 2014, 2008
- USENIX Symposium on Networked Systems Design and Implementation (NSDI) 2025,2023,2020, 2019, 2018, 2015
- Sponsorship Chair, ACM Symposium on Operating Systems Principles (SOSP) 2019
- Scholarship Committee, ACM Symposium on Operating Systems Principles (SOSP) 2007
- Works-in-Progress Chair, USENIX File and Storage Technologies (FAST) 2010

- ACM SIGCOMM 2023, 2021
- ACM Symposium on Operating Systems Principles (SOSP) 2015
- ACM SIGOPS/SIGMOD Symposium on Cloud Computing (SOCC) 2017, 2016, 2013, 2012, 2010
- ACM Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2021, 2015
- ACM European Conference on Computer Systems (Eurosys) 2022, 2021, 2013
- ACM International Systems and Storage Conference (SYSTOR) 2016
- USENIX Conference on File and Storage Technologies (FAST) 2019,2017,2016, 2014, 2011, 2010, 2009
- USENIX Annual Technical Conference (ATC) 2021

- USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage) 2014, 2013
- USENIX Workshop on Hot Topics in System Dependability (HotDep) 2010, 2008
- SIGCOMM Workshop on Hot Topics in Software Defined Networking (HotSDN) 2014
- IEEE International Conference on Dependable Systems and Networking (DSN) 2014
- IEEE International Conference on Peer-to-peer Computing (P2P) 2010
- IEEE International Conference on Distributed Computing Systems (ICDCS) 2009
- International Workshop on Peer-to-Peer Systems (IPTPS) 2009
- Workshop on Architecting Dependable Systems (WADS) 2009
- International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS) 2009
- IEEE International Symposium on Network Computing and Applications (NCA) 2008

AFFILIATIONS

Voted as the Vice President of the USENIX Board of Directors (2016-2020)
Voted on to the USENIX Board of Directors (2014-2022)

Association for Computing Machinery (ACM) (2001-2024)
Special Interest Group Operating Systems (ACM – SIGOPS) (2001-2024)
USENIX Association (Advanced Computing Systems Association) (2001-2024)
IEEE Computer Society (2009-2024)
National Society of Black Engineers (NSBE) (1996 – 2024)
Black Graduate Science Engineering Science Students (BGESS) association (1999-2007)

PUBLICATIONS:

Patents

Methods and systems for instantiating and transparently migrating executing containerized processes. Zhiming Shen, Hakim Weatherspoon, Robbert Van Renesse. US Patent App. 18/079,392, April 2023.

Thesis

Design and Evaluation of Distributed Wide-Area On-line Archival Storage Systems, Hakim Weatherspoon. Appears in *U.C. Berkeley PhD Dissertation*, Technical Report No. UCB/EECS-2006-130, October 13, 2006.

Books

Future Directions in Distributed Computing, Andre Schiper, Alex Shvartsman, Hakim Weatherspoon, Ben Zhao (*Editors*). *Lecture Notes in Computer Science*, Volume 2584, ISBN 3-540-00912-4, May 2003, 219 pages.
Awarded State-of-the-Art LNCS subseries.

The NEBULA Future Internet Architecture, Tom Anderson, Ken Birman, Robert Broberg, Matthew Caesar, Douglas Comer, Chase Cotton, Michael J. Freedman, Andreas Haeberlen, Zachary G. Ives, Arvind Krishnamurthy, William Lehr, Boon Thau Loo, David Mazieres, Antonio Nicolosi, Jonathan M. Smith, Ion Stoica, Robbert van Renesse, Michael Walfish, Hakim Weatherspoon, and Christopher S. Yoo. *Lecture Notes in Computer Science (LNCS), The Future Internet—Future Internet Assembly 2013: Validated Results and New Horizons*, Vol 7858, No 3, pp 16-26, March 2013.
Book Chapter

Refereed Archival (Refereed Journals)

Toward Cloud-Native, Machine Learning Base Detection of Crop Disease With Imaging Spectroscopy. Gloire Rubambiza, Fernando Romero Galvan, Ryan Pavlick, Hakim Weatherspoon,

Kaitlin M. Gold. In *Journal of Geophysical Research: Biogeosciences*, https://doi.org/10.1029/2022JG007342, May 2023.

P4xos: Consensus as a Network Service, Huynh Tu Dang, Pietro Bressana, Han Wang, Ki Suh Lee, Noa Zilberman, Hakim Weatherspoon, Marco Canini, Fernando Pedone, Robert Soulé. Appears in *IEEE/ACM Transactions on Networking (ToN)*, Vol 28, No 4, pp 1726-1738, August 2020.

Automated real-time integration of data from multiple sensors and nonsensor systems for prediction of dairy cow and herd status and performance. Martin Matias Perez, Gloire Rubambiza, Brandon Barker, Hakim Weatherspoon, and Julio O. Giordano, *Journal of Dairy Science*, Vol. 103, Suppl. 1, pp 119, 2020

Globally Synchronized Time via Datacenter Networks, Vishal Shrivastav, Ki Suh Lee, Han Wang, Hakim Weatherspoon, Appears in *IEEE/ACM Transactions on Networking (ToN)*, Vol 27, No 4, pp 1401-1416, August 2019.

Packet Clustering Introduced by Routers: Modeling, Analysis and Experiments, Chiun Lin Lim, Ki Suh Lee, Han Wang, Hakim Weatherspoon and Ao Tang. Appears in the *ACM Transactions on Modeling and Performance Evaluation of Computing Systems*, Vol 4, No 3, Article 15, 28 pages, September 2019.

Supercloud: Applying Internet Design Principles to Interconnecting Clouds, Robbert van Renesse, Hakim Weatherspoon, Zhiming Shen, and Weijia Song. Appears in *IEEE Internet Computing*, Vol 22, No 1, pp 82-86, January/February 2018.

Supercloud: A Library Cloud for Exploiting Cloud Diversity, Zhiming Shen, Qin Jia, Gur-Eyal Sela, Weijia Song, Hakim Weatherspoon, and Robbert van Renesse. Appears in *the ACM Transactions on Computer Systems (TOCS)*, Vol 35, No 2, Article 6, 33 pages, October 2017.

Isotope: ACID Transactions for Block Storage, Ji-Yong Shin, Mahesh Balakrishnan, Tudor Marian, and Hakim Weatherspoon. 2017. Appears in the *ACM Transactions on Storage (TOS)*, Vol 13, No 1, Article 4, 25 pages, February 2017.

Supercloud: Opportunities and Challenges, Qin Jia, Zhiming Shen, Weijia Song, Robbert van Renesse, and Hakim Weatherspoon. Appears in the *ACM SIGOPS Operating Systems Review (OSR)*, Vol 49, No 1, pp 137-141, January 2015.

A Brief Overview of the NEBULA Future Internet Architecture. Tom Anderson, Ken Birman, Robert Broberg, Matthew Caesar, Douglas Comer, Chase Cotton, Michael J. Freedman, Andreas Haeberlen, Zachary G. Ives, Arvind Krishnamurthy, William Lehr, Boon Thau Loo, David Mazieres, Antonio Nicolosi, Jonathan M. Smith, Ion Stoica, Robbert van Renesse, Michael Walfish, Hakim Weatherspoon, and Christopher S. Yoo. *SIGCOMM Computer Communication Review (CCR)*, Vol 44, No 3, pp 81-86, July 2014.

On the Feasibility of Completely Wireless Datacenters, Ji-Yong Shin, E. Gun Sirer, Hakim Weatherspoon, and Darko Kirovski, Appears in *IEEE/ACM Transactions on Networking (ToN)*, Vol 21, No 5, pp 1666-1679, October 2013.

Plug into the Supercloud . Dan Williams, Hani Jamjoom, Hakim Weatherspoon. Appears in *IEEE Internet Computing*, Vol 17, No 2, pp 28-34, March/April 2013.

Integrated Approach to Data Center Power Management. Lakshmi Ganesh, Hakim Weatherspoon, Tudor Marian, Ken Birman. Appears in *IEEE Transactions on Computers*, Vol 62, No 6, pp 1086-1096, June 2013.

Maelstrom: Transparent Error Correction for Communication between Data Centers. Mahesh Balakrishnan, Tudor Marian, Ken Birman, Hakim Weatherspoon, Lakshmi Ganesh. Appears in *IEEE/ACM Transactions on Networking (ToN)*, Vol 19, No 3, pp 617-629, June 2011.

Maintenance-Free Global Data Storage, Sean Rhea, Chris Wells, Patrick Eaton, Dennis Geels, Ben Zhao, Hakim Weatherspoon, and John Kubiatowicz. Appears in *IEEE Internet Computing*, Volume 5, No 5, September/October 2001, pp 40-49.

Non-Refereed Archival (Non-Refereed Journals)

Summary of the 3rd ACM SIGOPS workshop on large-scale distributed systems and middleware (LADIS 2009), Hakim Weatherspoon, Doug Terry, and Gregory Chockler. Appears in *ACM Operating Systems Review (OSR)*, Vol 43, No 4, December 2009, pp 3-4.

GOSSIP: Gossiping Over Storage Systems Is Practical, Hakim Weatherspoon, Hugo Miranda, Konrad Iwanicki, Ali Ghodsi, Yann Busnel. Appears in *ACM Operating Systems Review (OSR)*, Volume 41, No 5, October 2007, pp 75-81.

Exploiting the Synergy Between Gossiping and Structured Overlays, Ali Ghodsi, Seif Haridi, and Hakim Weatherspoon. Appears in *ACM Operating Systems Review (OSR)*, Volume 41, No 5, October 2007, pp 61-66.

Refereed Conferences

Breaking the VLB Barrier for Oblivious Reconfigurable Networks. Tegan Wilson, Daniel Amir, Robert Kleinberg , Vishal Shrivastav, Hakim Weatherspoon. In *ACM 56th Symposium on Theory of Computing (STOC)*, June 2024, Vancouver, Canada.

Seam Work and Simulacra of Societal Impact in Networking Research: A Critical Technical Practice Approach. Gloire Rubambiza, Phoebe Sengers, Hakim Weatherspoon, Jen Liu. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, May, 2024, Honolulu, HI.

Comosum: An Extensible, Reconfigurable, and Fault-Tolerant IoT Platform for Digital Agriculture. Gloire Rubambiza, Shiang-Wan Chin, Mueed Ur, Sachille Atapattu, José F. Martinez, Hakim Weatherspoon. In *USENIX Annual Technical Conference (ATC)*, July 2023, Boston, MA.

EdgeRDV: A Framework for Edge Workload Management at Scale. Gloire Rubambiza, Braulio Dumba, Andrew J Anderson, Hakim Weatherspoon. In *IEEE International Conference on Edge Computing and Communications (IEEE EDGE)*, July 2023, Chicago, IL.

Extending Optimal Oblivious Reconfigurable Networks to all N. Tegan Wilson, Daniel Amir, Vishal Shrivastav, Hakim Weatherspoon, Robert Kleinberg. In *SIAM Symposium on Algorithmic Principles of Computer Systems (APOCS)*, January 2023, Florence, Italy.

Optimal Oblivious Reconfigurable Networks. Daniel Amir, Tegan Wilson, Vishal Shrivastav, Hakim Weatherspoon, Robert Kleinberg, Rachit Agarwal. In *ACM 54th Symposium on Theory of Computing (STOC)*, June 2022, Rome, Italy.

Seamless Visions, Seamful Realities: Anticipating Rural Infrastructural Fragility in Early Design of Digital Agriculture. Gloire Rubambiza, Phoebe Sengers, Hakim Weatherspoon. In *ACM CHI Conference on Human Factors in Computing Systems (CHI)*, April-May, 2022, New Orleans, LA.

X-Containers: Breaking Down Barriers to Improve Performance and Isolation of Cloud-Native Containers. Zhiming Shen, Zhen Sun, Gur-Eyal Sela, Eugene Bagdasaryan, Christina Delimitrou, Robbert Van Renesse, Hakim Weatherspoon. In *the 24th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, April 2019, Providence, RI.

Shoal: A Network Architecture for Disaggregated Racks. Vishal Shrivastav, Asaf Valadarsky, Hitesh Ballani, Paolo Costa, Ki Suh Lee, Han Wang, Rachit Agarwal, Hakim Weatherspoon. In *the 16th USENIX symposium on Networked Systems Design and Implementation (NSDI)*, February 2019, Boston, MA.

Vegvisir: A Partition-Tolerant Blockchain for the Internet-of-Things. Kolbeinn Karlsson, Jiang, W., Stephen Wicker, S., Danny Adams, D., Ma, E., Robbert van Renesse, Hakim Weatherspoon. In the *Proceedings of the IEEE 38th International Conference on Distributed Computing Systems (ICDCS)*, July 2018, Vienna, Austria.

P4FPGA: A Rapid Prototyping Framework for P4, Han Wang, Robert Soulé, Huynh Tu Dang, Ki Suh Lee, Vishal Shrivastav, Nate Foster, and Hakim Weatherspoon, In *the Proceedings of the ACM Symposium of Software-defined networking Research (SOSR)*, April 2017, Santa Clara, CA.

Whippersnapper: A P4 Language Benchmark Suite, Huynh Tu Dang, Han Wang, Theo Jepsen, Gordon Brebner, Changhoon Kim, Jennifer Rexford, Robert Soulé, and Hakim Weatherspoon, To Appear in *the Proceedings of the ACM Symposium of Software-defined networking Research (SOSR)*, April 2017, Santa Clara, CA.

Follow the Sun through the Clouds: Application Migration for Geographically Shifting Workloads, Zhiming Shen, Qin Jia, Eyal Sela, Ben Rainero, Weijia Song, Robbert van Renesse, Hakim Weatherspoon, Appears in *the Proceedings of the ACM Symposium on Cloud Computing (SoCC)*, October 2016, Santa Clara, CA.

Towards Weakly Consistent Local Storage Systems, Ji-Yong Shin, Mahesh Balakrishnan, Tudor Marian, Jakub Szefer and Hakim Weatherspoon, Appears in *the Proceedings of the ACM Symposium on Cloud Computing (SoCC)*, October 2016, Santa Clara, CA.

Globally Synchronized Time via Datacenter Networks, Ki Suh Lee, Han Wang, Vishal Shrivastav, and Hakim Weatherspoon. Appears in *ACM SIGCOMM*, , August 2016.

Isotope: Transactional Isolation for Block Storage, Ji-Yong Shin, Mahesh Balakrishnan, Tudor Marian, Hakim Weatherspoon, Appears in *the Proceedings of the USENIX Conference on File and Storage Technologies (FAST)*, February 2016, Santa Clara, CA.

Timing is Everything: Accurate, Zero-cost, Available Bandwidth Estimation in High-speed Wired Network, Han Wang, Ki Suh Lee, Erluo Li, Chiun Lin Lim, Ao Tang, and Hakim Weatherspoon, To Appear in *Proceedings of the14th ACM SIGCOMM Internet Measurement Conference (IMC)*, November 2014, Vancouver, Canada.

PHY covert channel: Can you see the idles?, Ki Suh Lee, Han Wang and Hakim Weatherspoon, Appears in *Proceedings of the USENIX symposium on Networked Systems Design and Implementation (NSDI)*, April 2014, Seattle, WA.

Packet clustering introduced by routers: Modeling, analysis and experiments, Chiun Lin Lim, Ki Suh Lee, Han Wang, Hakim Weatherspoon, Ao Tang, Appears in *Proceedings of the 48th Annual Conference on Information Sciences and Systems (CISS)*, March 2014, Princeton, NJ.

SoNIC: Precise Realtime Software Access and Control of Wired Networks, Ki Suh Lee, Han Wang and Hakim Weatherspoon, Appears in the *Proceedings of the USENIX symposium on Networked Systems Design and Implementation (NSDI)*, April 2013, Lombard, IL.

Gecko: Contention-Oblivious Disk Arrays for Cloud Storage, Ji-Yong Shin, Mahesh Balakrishnan, Tudor Marian, and Hakim Weatherspoon, Appears in the *Proceedings of the USENIX conference on File and Storage Technologies (FAST)*, February 2013, San Jose, CA.

Fmeter: Extracting Indexable Low-level System Signatures by Counting Kernel Function Calls, Tudor Marin, Hakim Weatherspoon, Ki Suh Lee, and Abhishek Sagar, Appears in the *Proceedings of the ACM/IFIP/USENIX 13th Int'l Conference on Middleware*, December 2012, Montreal, Canada.

On the Feasibility of Completely Wireless Datacenters, Ji-Yong Shin, E. Gun Sirer, Hakim Weatherspoon, and Darko Kirovski, Appears in the *Proceedings of ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS)*, October 2012, Austin, TX.
Awarded Best Paper Award

NetBump: User-extensible Active Queue Management with Bumps on the Wire, Mohammad Al-Fares, Rishi Kapoor, George Porter, Sambit Das, Hakim Weatherspoon, Balaji Prabhakar, and Amin Vahdat, Appears in the *Proceedings of ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS)*, October 2012, Austin, TX.

The Xen-Blanket: Virtualize Once, Run Everywhere, Dan Williams, Hani Jamjoom, and Hakim Weatherspoon. Appears in the *Proceedings of the 7th ACM European Conference on Computer Systems (Eurosys)*, April 2012, Bern, Switzerland.

Beyond Power Proportionality: Designing Power Lean Cloud Storage, Lakshmi Ganesh, Hakim Weatherspoon, and Ken Birman. Appears in *Proceedings of the 10th IEEE International Symposium on Network Computing and Applications (NCA)*, August 2011, Cambridge, MA.

Overdriver: Handling Memory Overload in an Oversubscribed Cloud, Dan Williams, Hani Jamjoom, Yew-Huey Liu, and Hakim Weatherspoon. Appears in *Proceedings of the 7th ACM International Conference on Virtual Execution Environments (VEE)*, March 2011, Newport Beach, CA.

Instrumentation for Exact Packet Timings in Networks, Daniel A. Freedman, Tudor Marian, Jennifer H. Lee, Ken Birman, Hakim Weatherspoon, Chris Xu. Appears in *Proceedings of the IEEE*

International Instrumentation and Measurement Technology Conference (I2MTC), May 2011, Binjiang, Hangzhou, China.

Exact temporal characterization of 10 Gbps optical wide-area network, Daniel A. Freedman, Tudor Marian, Jennifer H. Lee, Ken Birman, Hakim Weatherspoon, and Chris Xu. Appears *in Proceedings of the 10th ACM SIGCOMM Internet Measurement Conference (IMC)*, Nov 2010, Melbourne, Australia.

RACS: A Case for Cloud Storage Diversity, Lonnie Princehouse, Hussam Abu-Libdeh, Hakim Weatherspoon. Appears in *Proceedings of the First ACM Symposium on Cloud Computing (SOCC*), June 2010, Indianapolis, IN.

Empirical Characterization of Uncongested Lambda Networks and 10GbE Commodity Endpoints, Tudor Marian, Daniel A. Freedman, Ken Birman, Hakim Weatherspoon. Appears in *Proceedings of the 40th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN)*, June 2010, Chicago, IL.

Smoke and Mirrors: Mirroring Files at a Geographically Remote Location Without Loss of Performance, Hakim Weatherspoon, Lakshmi Ganesh, Tudor Marian, Mahesh Balakrishnan, and Ken Birman. Appears in *Proceedings of the 8th USENIX Conference on File and Storage Technologies (FAST)*, February 2009, San Francisco, CA.

Maelstrom: Transparent Error Correction for Lambda Networks, Mahesh Balakrishnan, Tudor Marian, Ken Birman, Hakim Weatherspoon, Einar Vollset. Appears in *Proceedings of the 5th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, April 2008, San Francisco, CA.

Antiquity: Exploiting a Secure Log for Wide-Area Distributed Storage, Hakim Weatherspoon, Patrick Eaton, Byung-Gon Chun, and John Kubiatowicz. Appears in *Proceedings of the 2nd ACM European Conference on Computer Systems (EuroSys)*, March 2007, Lisbon, Portugal.

Efficient Replica Maintenance for Distributed Storage Systems, Byung-Gon Chun, Frank Dabek, Andreas Haeberlen, Emil Sit, Hakim Weatherspoon, M. Frans Kaashoek, John Kubiatowicz, and Robert Morris. Appears in *Proceedings of the 3rd USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, May 2006, San Jose, CA.

Pond: the OceanStore Prototype, Sean Rhea, Patrick Eaton, Dennis Geels, Hakim Weatherspoon, Ben Zhao, and John Kubiatowicz. Appears in *Proceedings of the 2nd USENIX Conference on File and Storage Technologies (FAST)*, March 2003, San Francisco, CA.
Awarded best student paper.

OceanStore: An Architecture for Global-Scale Persistent Storage , John Kubiatowicz, David Bindel, Yan Chen, Steven Czerwinski, Patrick Eaton, Dennis Geels, Ramakrishna Gummadi, Sean Rhea, Hakim Weatherspoon, Westley Weimer, Chris Wells, and Ben Zhao. Appears in *Proceedings of the Ninth international Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2000)*, November 2000. Cambridge, MA.

Refereed Workshops

Paradoxes in Creating the Future of Farm Work: Anticipating Social Impact through the Lens of Early Adopters. Gloire Rubambiza, Phoebe Sengers, and Hakim Weatherspoon. Automation Experience at the Workplace *Workshop at the Human Factors in Computing Systems Conference (CHI)*, Yokohama, Japan, May 2021.

Paradoxes in Producing the Future of Farm Work: Anticipating Social Impact through the Lens of Early Adopters, Gloire Rubambiza, Phoebe Sengers, Hakim Weatherspoon. Appears in *ACM CHI workshop Automation Experience at the Workplace*, May 2021.

Smart Spot Instances for the Supercloud, Qin Jia, Zhiming Shen, Weijia Song, Robbert van Renesse, Hakim Weatherspoon, Appears in *the Proceedings of the 3rd Workshop on CrossCloud Infrastructures & Platforms (CrossCloud)*, April 2016.

Economics of a Supercloud, Ian Kash, Qin Jia, Zhiming Shen, Weijia Song, Robbert van Renesse, Hakim Weatherspoon, Appears in *the Proceedings of the 3rd Workshop on CrossCloud Infrastructures & Platforms (CrossCloud)*, April 2016.

Software Defining System Devices with the "Banana" Double-Split Driver Model, Dan Williams, Hani Jamjoom, and Hakim Weatherspoon. Appears in *Proceedings of the 6th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud)*, June 2014, Philadelphia, PA.

Gecko: A contention-aware design for cloud storage. Ji Yong Shin, Mahesh Balakrishnan, Lakshmi Ganesh, Tudor Marian, and Hakim Weatherspoon. Appears in *Proceedings of the 4th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage)*, June 2012, Boston, MA.

Unshakle the Cloud!, Dan Williams, Eslam Elnikety, Mohamed Eldehiry, Hani Jamjoom, Hai Huang, and Hakim Weatherspoon. Appears in *Proceedings of the 3rd USENIX Workshop on Hot Topics in Cloud Computing (HotCloud)*, June 2011, Portland, CA.

Cloudifying Source Code Repositories: How Much Does it Cost?, Michael Siegenthaler and Hakim Weatherspoon. Appears in *Proceedings of the 3rd ACM International Workshop on Large-Scale Distributed Systems and Middleware (LADIS)*, October 2009, Big Sky, MT.

Optimizing Power Consumption in Large Scale Storage Systems, Lakshmi Ganesh, Hakim Weatherspoon, Mahesh Balakrishnan, Ken Birman. Appears in *Proceedings of the 11th ACM Workshop on Hot Topics in Operating Systems (HotOS)*, May 2007, San Diego, CA.

Proactive replication for data durability, Emil Sit, Andreas Haeberlen, Frank Dabek, Byung-Gon Chun, Hakim Weatherspoon, Robert Morris, M. Frans Kaashoek, and John Kubiatowicz. Appears in *Proceedings of the 5th International Workshop on Peer-to-Peer Systems (IPTPS)*, February 2006, Santa Barbara, CA.

ChunkCast: An Anycast Service for Large Content Distribution, Byung-Gon Chun, Peter Wu, Hakim Weatherspoon, and John Kubiatowicz. Appears in *Proceedings of the 5th International Workshop on Peer-to-Peer Systems (IPTPS)*, February 2006, Santa Barbara, CA.

Efficiently Binding Data to Owners in Distributed Content-Addressable Storage Systems, Patrick Eaton, Hakim Weatherspoon, and John Kubiatowicz. Appears *in Proceedings of the 3rd International IEEE Security in Storage Workshop (SISW)*, December 2005, San Francisco, CA.

Erasure Coding vs. Replication: A Quantitative Comparison , Hakim Weatherspoon and John Kubiatowicz. Appears in *Proceedings of the First International Workshop on Peer-to-Peer Systems (IPTPS 2002)*, March 2002, Cambridge, MA.

In Review

Shale: A Practical, Scalable Oblivious Reconfigurable Network. Daniel Amir, Nitika Saran, Tegan Wilson, Robert Kleinberg, Vishal Shrivastav, Hakim Weatherspoon. Submitted to *ACM SIGCOMM*, 2024.

A Decentralized SDN Architecture for the WAN. Alexander Krentsel, Nitika Saran, Bikash Koley, Subhasree Mandal, Ashok Narayanan, Sylvia Ratnasamy, Ali Al-Shabibi, Anees Shaikh, Rob Shakir, Ankit Singla, Hakim Weatherspoon. Submitted to *ACM SIGCOMM*, 2024.

Towards Swap-Free, Continuous Ballooning for Fast, Cloud-based VM Migrations. Kevin Negy, Tycho Nightingale, Zhiming Shen, Hakim Weatherspoon. Submitted to *USENIX Annual Technical Conference (ATC)*, 2024.

LoCo: Localizing Congestion. Vishal Shrivastav, Saksham Agarwal, Rachit Agarwal, and Hakim Weatherspoon. Submitted to *USENIX Networked Systems Design and Implementation*, 2022.

Technical Reports

Improving Oblivious Reconfigurable Networks with High Probability. Tegan Wilson, Daniel Amir, Robert Kleinberg , Vishal Shrivastav, Hakim Weatherspoon. In *arXiv prepring arXiv:2308.14837*, August 2023.

Optimal Oblivious Reconfigurable Networks. Daniel Amir, Tegan Wilson, Vishal Shrivastav, Hakim Weatherspoon, Robert Kleinberg, Rachit Agarwal. *arXiv preprint arXiv:2111.08780*, November 2021.

Tamperproof Provenance-Aware Storage for Mobile Ad Hoc Networks, Danny Adams, Gloire Rubambiza, Pablo Fiori, Xinwen Wang, Hakim Weatherspoon, Robbert Van Renesse. *Cornell University Technical Report https://hdl.handle.net/1813/98854*, December 2020.

Ripple: A Practical Declarative Programming Framework for Serverless Compute. Shannon Joyner, Mike MacCoss, Christina Delimitrou, Hakim Weatherspoon. *arXiv preprint arXiv:2001.00222*, January 2020.

Partitioned Paxos via the Network Data Plane. Zhiming Shen, Huynh Tu Dang, Pietro Bressana, Han Wang, Ki Suh Lee, Noa Zilberman, Hakim Weatherspoon, Marco Canini, Fernando Pedone, Robert Soulé. *arXiv preprint arXiv:1901.08806*, January 2019.

X-Containers: Breaking Down Barriers to Improve Performance and Isolation of Cloud-Native Containers. Zhiming Shen, Zhen Sun, Gur-Eyal Sela, Eugene Bagdasaryan, Christina Delimitrou, Robbert Van Renesse, Hakim Weatherspoon. *Cornell University Technical Report https://ecommons.cornell.edu/handle/1813/58662*, August 2018.

Shoal: A Lossless Network for High-density and Disaggregated Racks. Vishal Shrivastav, Asaf Valadarsky, Hitesh Ballani, Paolo Costa, Ki Suh Lee, Han Wang, Rachit Agarwal, Hakim Weatherspoon. *Cornell University Technical Report https://ecommons.cornell.edu/handle/1813/49647*, April 2017.

Network Hardware-Accelerated Consensus, Huynh Tu Dang, Pietro Bressana, Han Wang, Ki Suh Lee, Hakim Weatherspoon, Marco Canini, Fernando Pedone, Robert Soulé. *arXiv preprint arXiv:1605.05619*, May 18, 2016.

VirtualWires for Live Migrating Virtual Networks across Clouds, Dan Williams, Zhefu Jiang, Hani Jamjoom, Hakim Weatherspoon, *Technical Report RC25378*, IBM, May 2013.

Netslice: Scalable Multi-core Packet Processing in User-space, Tudor Marian, Ki Suh Lee, and Hakim Weatherspoon. *Cornell University Technical Report http://hdl.handle.net/1813/29543*, July 2012.

Netbump: User-extensible Active Queue Management with Bumps on the Wire, George Porter, Rishi Kapoor, Sambit Das, Mohammad Al-Fares, Hakim Weatherspoon, Balaji Prabhakar, and Amin Vahdat. UC San Diego *Technical Report CS2012-0976*, April 2012.

On the Feasibility of Completely Wireless Data Centers, Ji-Yong Shin, Emin Gün Sirer, Hakim Weatherspoon, Darko Kirovski. *Cornell University Technical Report http://hdl.handle.net/1813/22846*, April 2011.

Fmeter: Extracting Indexable Low-level System Signatures by Counting Kernel Function Calls, Tudor Marian, Abishek Sagar, Ki Suh Lee, and Hakim Weatherspoon. *Cornell University Technical Report http://hdl.handle.net/1813/23568*, August 2011.

Long-Term Data Maintenance: A Quantitative Approach, Hakim Weatherspoon, Byung-Gon Chun, Chiu Wah So, John Kubiatowicz. *UC Berkeley Technical Report UCB//CSD-05-1404*, July 2005.

Monitoring, Analyzing, and Controlling Internet-scale Systems with ACME, David Oppenheimer, Vitaliy Vatkovskiy, Hakim Weatherspoon, Jason Lee, David A. Patterson, and John Kubiatowicz. *UC Berkeley Technical Report UCB//CSD-03-1276*, October 2003.

Silverback: A Global-Scale Archival System, Hakim Weatherspoon, Chris Wells, Patrick R. Eaton, Ben Y. Zhao, and John D. Kubiatowicz. *UC Berkeley Technical Report: UCB//CSD-01-1139*, March 2001.

OceanStore: An Extremely Wide-Area Storage System, John Kubiatowicz, David Bindel, Yan Chen, Patrick Eaton, Dennis Geels, Ramakrishna Gummadi, Sean Rhea, Hakim Weatherspoon, Westley Weimer, Chris Wells, and Ben Zhao. *UC Berkeley Technical Report UCB//CSD-00-1102*, May 2000.

GRADUATE FIELD ACTIVITY

Graduate Field Membership

Computer Science (CS)
Electrical and Computer Engineering (ECE)
Systems Engineering

Graduated Ph.D. Students (Ph.D. Advisor and Dissertation Committee Chairperson)

Vishal Shrivastav. "Towards High-Speed Networking in the Post-Moore Era". Ph.D., Cornell University, August 2020.

Han Wang. "Towards A Programmable Dataplane". Ph.D., Cornell University, May 2017.

Zhiming Shen. "Separating Protection and Management in Cloud Infrastructures". Ph.D., Cornell University, December 2017.
Co-advised with Robbert van Renesse

Ki Suh Lee. "Towards Precise Network Measurements". Ph.D., Cornell University, January 2017.

Ji-Yong Shin, "Isolation in Cloud Storage". Ph.D., Cornell University, January 2017.

Dan Williams. "Towards Superclouds". Ph.D., Cornell University, January 2013.

Lakshmi Ganesh. "Data Center Energy Management". Ph.D., Cornell University, January 2012.
Co-advised with Ken Birman

Tudor Marian. "Operating Systems Abstractions for Software Packet Processing in Datacenters". Ph.D., Cornell University, January 2011.

Current Ph.D. Student Advisee (Primary Advisor)

Daniel Amir	expected graduation 2024
Gloire Rubambiza	expected graduation 2024
Shiang Chin	expected graduation 2025
Nitika Saran	expected graduation 2026

Ph.D. Committees Served on

Matt Burke. "Towards High Performance Abstractions for Strong Geo-Replicated Systems", Ph.D. Cornell University, February 2024.

Ana Smith. "Leveraging Context Documents for Social Natural Language Processing", Ph.D. Cornell University, May 2023.

Jiangnan Cheng. "Generalized Information Bottleneck", Ph.D. Cornell University, July 2022.

Yu Gan. "Designing ang Managing Large-Scale Interactive Microservices in Datacenters", Ph.D. Cornell University, December 2021.

Michael George. "Trust, Authority, and Information Flow in Secure Distributed Systems", Ph.D., Cornell University, October 2020.

Brittany Nkounkou. “Certifying Software for Designing Asynchronous Circuits”, Ph.D., Cornell University, August 2020.

Mohamed Ismail. “Hardware-Software Co-optimization for Dynamic Languages”, Cornell University, Ph.D., May 2019.

Brendan Cully. “Extending Systems with Virtual Hardware Aggregation”, Ph.D., University of British Columbia, January 2017.

Chiun Lin Lim. “Packet clustering introduced by routers: Modeling, analysis and experiments”. Ph.D., Cornell University, August 2014.

Edgar Velazquez Armendariz. “Complex Luminaries: Illumination and Appearance Rendering”. Ph.D., Cornell University, July 2014.

Ryan Peterson. “Efficient Content Distribution with Managed Swarms”. Ph.D., Cornell University, October 2011.

Masters Students Advised

Danny Adams (Distributed Systems)
Yifan Zhao, Kevin Huang
Shannon Joyner (Ripple), Julia Proft
Qin Jia (Supercloud), Dhruv Singal (P4FPGA)
Roman Averbukh, Brett Fernandes, Tanvi Goel, Emma Kilfoyle, Erluo Li, Ashik Ratnani Abhishek Sagar, Kohei Shinkawa

Undergraduate Student Independent Project Advisees

Annie Kimmel, Mueed Ur Rehman, Eaveryll Henriquez, Steven Long
Zhenlin Chen, Afua Ansah, Ashraful Hassan, Tiffany Guo, Ziying Liang,
Pablo Fiori, Akhil Bandahra
Gur-Eyal Sela
Roman Averbukh, James Blake II, Danielle Bridges, Favian Contreras, William Jackson, Ethan Kao, Jong Hwi Lee, Erluo Li, Hector Tosada, Avadhani,Vighnesh, Mengya You, Jason Zhao, Gary Zibrat

GRANTS

STC: Center for Research On Programmable Plant Systems (CROPPS) (NSF). October 2021 – September 2026. $25,000,000.

CHS: Medium: Understanding and Improving the Social Impact of High-Bandwidth Farm Networking Infrastructure (NSF). September 2020 – August 2024. $1,200,000.

SBIR Phase I: Intelligent, Real-Time Migration of Scientific Computing Applications on Commercial Cloud-based HPC platforms (DOE). June 2021 – December 2021. $198,000.

SBIR Phase I: Intelligent, real-time migration of software containers to optimize cloud computing resources (NSF). August 2020 – February 2021. $256,000.

Microsoft Investigator Fellowship. February 2020 – 2022. $200,000.

NRT-HDR & ROL: Team Training to Develop New Hardware and Software Applications for Digital Plant Science Across Multiple Scales (NSF). September 2019 – August 2024. $3,000,000.

SBIR Phase I: Intelligent, real-time migration of software containers to optimize cloud computing resources (NSF). February 2019 – January 2020. $250,000.

NeTS: CSR: Large: Collaborative Research: Co-Design of Network, Storage and Computation Fabrics for Disaggregated Datacenters (NSF). September 2017 – August 2022. $2,100,000.

NSF Student Travel Grant for 2019 ACM Symposium of Operating Systems Principles (SOSP) (NSF). July 2019 – June 2020. $20,000.

Towards an Emergency Edge Supercloud (NIST). June 2017 – May 2020. $1,241,825.

Towards Synchronized Programmable Data Planes. Cisco. February 2017. $150,000.

COSciN: Cornell Open Science Network. National Science Foundation (NSF), Infrastructure, Innovation, and Engineering program (CC*IIE). September 2014 – August 2016. $1,000,000.

Plug into the Supercloud. National Science Foundation (NSF). September 2014 – August 2017. $500,000.

Intel Early Career Faculty Honor Program. October 2012. $40,000.

Mini-cloud Testbed for Mission-critical Clouds. Defense University Research Instrumentation Program (DURIP) grant through the Air Force Office of Scientific Research (AFOSR). September 1, 2012 – August 31, 2012. $500,000.

CAREER: Towards Inter-Datacenter Communication for Next-Generation Networks. National Science Foundation (NSF), CAREER Award. September 1, 2011 – August 31, 2016. $600,106.

Research in Storage and Compute Cloud Diversity. National Science Foundation (NSF), EAGER. September 1, 2011 – August 31, 2014. $200,000.

Alfred P. Sloan Research Fellow. September 1, 2011 – August 31, 2013. $50,000.

Research Securing our Critical Network Infrastructure with the Software Defined Network Approach. Defense Advanced Research Projects Agency (DARPA), Computer Science Study Panel (CSSP). April 1, 2011 – March 31, 2016. $721, 324.

FIA: Collaborative Research: NEBULA: A Future Internet that Supports Trustworthy Cloud Computing. National Science Foundation (NSF), Future Internet Architecture (FIA). September 1, 2010 – August 31, 2014. $1,005,998.

CCF: CiC: Science of Cloud-Scale Computing. National Science Foundation (NSF). April 1, 2011 – March 31, 2014. $370,000.

Toward Power-Lean Cloud Storage: Beyond Power Proportionality. Network Appliance (NetApp) Faculty Fellowship. September 1, 2010 – August 31, 2011. $40,000.

IBM Faculty Award. December 1, 2009 – November 30, 2010. $20,000.

Amazon Web Services Research Grant. September 1, 2010 – August 31, 2011. $4,000.

Intel Equipment Grant. 2008. $40,000.

Cisco Equipment Grant. 2008. $50,000.

PRESENTATIONS

Invited Keynotes

ACM Richard Tapia Celebration of Diversity in Computing (ACM Tapia)
September 2020

Cornell CIS 20th Anniversary, Panel Moderator
October 2019

Microsoft PhD Summit
October 2019

Food systems and national security
May 2019

CRA-WP Underrepresented Minorities and people with Disabilities (URMD) Grad Cohort
March 2020
March 2019

Plenary Speaker - ACM Richard Tapia Celebration of Diversity in Computing (ACM Tapia)
September 2019

Digital Agriculture
- Viticulture Symposium, July 2019
- New York State Growers Expo, January 2019

Conference for African American Researchers in Mathematical Sciences (CAARNS)
- University of Michigan, June 2017

National Academy of Sciences, Kavli Frontiers of Science 16th Chinese-American Symposium
- Beijing, October 2014

Plug into the Supercloud
Seoul National University (SNU), December 2018
Invited Keynote Speaker at the 2013 ACM Symposium of Operating Systems Principles (SOSP) Diversity Workshop, November 2013

Invited Plenary Speaker at the 2013 ACM Richard Tapia Celebration of Diversity in Computing, February 2013

Invited Talks

Optimal Reconfigurable Networks
- ACM STOC, June 2022
- Microsoft Research, April 2022
- University of Washington, November 2021

Vegvisir: Disconnected and Low-power blockchain
- Microsoft Research, July 2018
- NIST PSIAP (National Institute of Standards and Technology Public Safety Innovation Accelerator Program), Stakeholders/PI meeting, July 2019
- NIST PSIAP (National Institute of Standards and Technology Public Safety Innovation Accelerator Program), Stakeholders/PI meeting, July 2018

P4FPGA
- Google Networking Summit, 2017
- Cisco PI Mtg, 2017
- UK Networking and Systems Summit, July 2016

PHY Covert Timing Channel: Can you See the Idles?
- New England Networking and Systems Workshop, November 2014
- MIT, September 2014
- Harvard University, September 2014
- National Reconnaissance Office (NRO), July 2014

From the Cloud to SoNIC: Precise Realtime Software Access and Control of Wired Networks
- University of College, London, 2016
- Imperial College, 2016
- University of Cambridge, 2015 and 2016
- University of Edinburgh, 2016
- Oxford, 2016
- Leeds, 2016
- Glasgow, 2016
- Queen Mary University of London, 2016
- University of Bristol, 2016
- Stanford University, April 2014
- University of California, Berkeley, February 2014
- Electronic Proving Ground, Army Research Lab, December 2013
- University of Washington, January 2013
- Purdue University, December 2012
- UC San Diego, November 2012

Plug into the Supercloud
- Rice University, December 2017
- University of British Columbia, 2017
- West Point, 2017
- University of Lancaster, July 2016

- University of Edinburgh, July 2016
- Imperial College, July 2016
- University of College, London, July 2016
- University of Michigan, 2016
- EPFL, 2016
- ETH Zurch, 2016
- University of Italian Switzerland, 2016
- MaxPlanck, planned 2016
- Wisconsin, December 2012
- Howard University, December 2012
- Portland State University, November 2012

Storage and Disaster Tolerance for Global-scale Datacenters
Netflix, March 2011

Critical Network Infrastructure and Commodity Routers: A Practical Approach
IBM, October 2011

Invited Contributions

Digital Agriculture
- CIDA Hackathon, March 2021, 2020, 2019
- CIDA Faculty Retreat, February 2020
- CIDA Fall Workshop, October 2021, 2020, 2019
- New York State Growers Expo, January 2019
- CIDA Fall Workshop, October 2018
- CIDA Spring Retreat, March 2018

Disaggregated Resources
- Google Networking Summit, March 2019
- Network Programming Initiative, October 2018
- NSF Datacenter Workshop, July 2018
- NSF Cloud 3.0 Workshop, January 2018

Datacenter time protocol (DTP)
- Dagstuhl, Low-latency datacenter networking, July 2016

PHY Covert Timing Channel: Can you See the Idles?
- TRUST Autumn Conference, November 2013

From the Cloud to SoNIC: Precise Realtime Software Access and Control of Wired Networks
- University of Texas Cloud Workshop, November 10, 2017
- Stanford University, April 2014
- University of California, Berkeley, February 2014
- NSF Future Internet Architecture, February 2014
- TRUST Autumn Conference, November 2012
- GENI Engineering Conference, October 2012

Understanding The Cloud and our Critical Network Infrastructure with SoNIC

- TRUST Executive Meeting, November 2011

Wireless Data Centers
- TRUST Autumn Conference, November 2012
- Intel Wireless Data Center Workshop, July 2012

Unshackle the Cloud!
- Eastern Great Lakes Systems and Networking Workshop, August 2011
- IBM Haifa, July 2011

Commoditization of Cloud Computing Research Agenda
- Cornell Silicon Valley, March 2011

What's Wrong with the Raw Socket? New Operating System A
-Vancouver Systems Colloquium (VSC), October 2010

Smoke and Mirrors: Shadowing Files at a Geographically Remote Location Without Loss of Performance
- Large-Scale Distributed Systems and Middleware (LADIS), September 2008

SERVICE [EXTERNAL]

DARPA Information Science and Technology (ISAT) Study Group, 2015-2020

CRA Committee on Widening Participation, (WP), Board Member, 2020-2021

ACM CRA-WP Underrepresented Minorities and people with Disabilities (URMD) Grad Cohort Presenter, March 2019 and 2020

USENIX Vice President of the Board of Directors, 2016-2020

USENIX Board of Directors, 2014-2021

USENIX Committee for Black, African-American and African Diaspora Inclusion, 2020

Microsoft PhD Summit, October 2019

ACM Richard Tapia Celebration of Diversity in Computing (ACM Tapia), Presenter, Sept 2020
ACM Richard Tapia Celebration of Diversity in Computing (ACM Tapia), Plenary Speaker, Sept 2019

SERVICE [INTERNAL]

University Service

Associate Director, Cornell Institute for Digital Agriculture (CIDA), 2018-2022
CIDA Hackathon Co-chair and organizer, 2018-2021
University Senator representing the Department of Computer Science, 2016-2021
College of Arts and Science, Undergraduate Admission, 2017

College Service

Associate Dean for Diversity and Inclusion, Computing and Information Science (CIS), 2020
Dean Search Committee, College of Computing and Information Science (CIS), 2019-2020

Diversity Committee, College of Computing and Information Science (CIS), 2016-2022
Technology Committee, College of Computing and Information Science (CIS), 2016-2017

Department Committee Assignments

Computer Science Diversity Committee, 2018-2022
Computer Science Task Force Fighting Racism and Fostering Inclusion of Black Community Members, 2020
Faculty Hiring Committee, 2014
Graduate Admissions Committee, 2015, 2008-2013

Participation and leadership of diversity initiatives, outreach, cross-campus activities, mentoring, etc.

Associate Dean for Diversity and Inclusion, Computing and Information Science (CIS), 2020

Computer Science Diversity Committee, 2018-2022

Computer Science Task Force Fighting Racism and Fostering Inclusion of Black Community Members, 2020

NSF CAREER university panel, 2013-2014

Diversity Programs in Engineering (DPE), CATALYST/lunch, Presenter, 2009-2020

SoNIC Summer Research Workshop, June 2011-2022
- http://www.cs.cornell.edu/workshop/sonic
- Brought 30 undergraduate students each year to Cornell from underrepresented backgrounds to inspire them to continue their education and pursue a PhD in CS.
- Given that on average less than 3% of all annual CS PhD recipients are underrepresented minorities (~15-20 African American, ~15-20 Hispanic, ~3 Native American, each year), the workshops impact is significant since it aims to increase this number of PhDs in CS who are underrepresented minorities.

Tapia Scholarship, 2009-2022
- Created a department scholarship opportunity to attend and participate in the ACM Richard Tapia Celebration of Diversifying Computing, which features the most diverse gathering of individuals in computing fields (http://tapiaconference.org).

CSMore, Computer Science rising sophoMore program, 2020-2022
- https://www.cs.cornell.edu/events/presophomoresummerprogram
- Created, along with Anne Bracy and Eva Tardos, a Cornell Computer Science Department summer program that helps freshman perform well in their sophomore year. A disproportionate number of underrepresented students had a difficult time during their sophomore year. The Rising Sophomore Program is designed to increase recruitment, retention, and graduation rates of URM students in CS.

CodeAfrique, 2019-2022
- http://codeafrique.com
- Co-organize with Robbert van Renesse. Code Afrique aims to increase participation in computing from African communities. We have organized two Code Afrique hackathons in 2019 and 2020 in Ghana and Eswatini (formerly Swaziland), each hosting more than 250 students