

CURRICULUM VITAE

George Porter

Department of Computer Science and Engineering
 University of California, San Diego
 9500 Gilman Drive, Dept. 0404
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Research Interests

Developing novel computer networks to enable high-performance and sustainable computer systems.

Education

University of California, Berkeley Computer Science Ph.D. (2008)
 Dissertation: "Improving Distributed Application Reliability with End-to-End Datapath Tracing"
 Advisor: Randy H. Katz; Committee: Scott Shenker, Ion Stoica, Randy H. Katz

University of California, Berkeley Computer Science M.S. (2003)
 Thesis: "Traffic Matrix Estimation for Low-loss Routing in Hybrid Networks"
 Advisor: Randy H. Katz; Committee: Ion Stoica and Randy H. Katz

University of Texas at Austin Computer Sciences B.S. (2001)
 Undergraduate Thesis: "A Commuting Diagram Relating Threaded and Non-threaded JVM Models"
 Advisor: J Strother Moore; Committee: J Strother Moore and Robert S. Boyer

Academic Research Experience

2022—Present Professor, University of California, San Diego
 2018—2022 Associate Professor, University of California, San Diego
 2014—2018 Assistant Professor, University of California, San Diego
 2013—Present Co-Director, UCSD Center for Networked Systems (CNS)
 2010—2014 Assistant Research Scientist, University of California, San Diego
 2009—2010 Postdoctoral Scholar, University of California, San Diego
 2008—2009 Visiting Scholar, University of California, San Diego
 2001—2008 Graduate Student Researcher, University of California, Berkeley
 2001 Research Assistant, University of Texas at Austin

Academic Teaching Experience

2011—2014 Lecturer, Revelle College, University of California, San Diego
 2005 Summer Instructor, University of California, Berkeley
 2002 Teaching Assistant, University of California, Berkeley

Industrial Experience

2018—Present CTO and Chief Scientist, inFocus Networks, La Jolla, CA.
 2009 Principal Investigator, Sun Microsystems Laboratories, Burlington, MA.
 2008—2009 Technical Staff, Chief Technology Office, Sun Microsystems, Menlo Park, CA
 2004 Research Intern, Network Technology Office, Sun Microsystems, Menlo Park, CA
 2002 Research Intern, Compaq Systems Research Center / HP Labs, Palo Alto, CA
 1995 – 2000 Programmer / Analyst, NeoSoft, Inc., Houston, TX

Refereed Conference, Journal, and Workshop Publications

NetZero'23	Yibo Guo and George Porter, "A metric for factoring data movement into chasing the sun", Proceedings of the 1st Workshop on NetZero Carbon Computing (NetZero'23), Montreal, Canada, February 2023.
HotCarbon'22	Amanda Tomlinson and George Porter, "Something Old, Something New: Extending the Life of CPUs in Datacenters", Proceedings of the 1st Workshop on Sustainable Computer Systems Design and Implementation (HotCarbon'22), San Diego, Calif., July 2022.
CoNext'22	Yibo Guo, William M. Mellette, Alex C. Snoeren, and George Porter, "Scaling beyond packet switch limits with multiple dataplanes", Proceedings of ACM CoNEXT, Rome, Italy, Dec. 2022.
WeCan'22	Soroya Rowley, George Porter, and Monica Stuftt, "Telling the Story of Climate, Sustainability, and Modern Computing to the General Public", Proceedings of the Second ACM SIGEnergy Workshop on Society, Climate, and Sustainability (WeCan'22), June 2022.
EuroSys'22	Lixiang Ao, George Porter, and Geoff Voelker, "FaaS Made Fast Using Snapshot-based VMs", Proceedings of the 17th ACM European Conference on Computer Systems (EuroSys'22), Rennes, France, April 2022.
ACM e-energy	George Porter, "How new kinds of computer networks can reduce the environmental impact of cloud computing," The First ACM SIGEnergy Workshop on Climate, Sustainability, and Society (ACM e-Energy 2021), Online event, June 2021.
Limits 21	Rob McGuinness and George Porter, "Stipulated Smartphones for Students: The Requirements of Modern Technology for Academia," ACM Limits, June 2021.
Opt.Comm 20	William M. Mellette, Alex Forenchich, Jason Kelley, Joseph Ford, George Porter, Alex C. Snoeren, and George Papan, "Optical networking within the Lightwave Energy-Efficient Datacenter project (Invited)", J. Opt. Commun. Netw. 12(12):378-389, Dec 2020.
SoCC'20	Shelby Thomas, Lixiang Ao, Geoffrey M. Voelker, and George Porter, "Particle: Ephemeral Endpoints for Serverless Networking," in Proceedings of the ACM Symposium on Cloud Computing (SoCC), Virtual Event, October 2020.
FCCM'20	Alex Forenchich, Alex C. Snoeren, George Porter, and George Papan, "Corundum: An Open-Source 100-Gbps NIC," in Proceedings of the 28 th IEEE International Symposium On Field-Programmable Custom Computing Machines (FCCM), Fayetteville, AR., May 2020.
NSDI'20	William M. Mellette, Rajdeep Das, Yibo Guo, Rob McGuinness, Alex C. Snoeren, and George Porter, "Expanding across time to deliver bandwidth efficiency and low latency," in Proceedings of the 17 th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI), Santa Clara, CA, February 2020.
TLJ'19	Megan Bardolph, George Porter, Paul Hadjipieris, and Jace Hargis, "Always on Stress: The Emotive Impact of Anytime, Anywhere Discussion Boards," in Transformative Dialogues: Teaching and Learning Journal(2), 2019.
OFC'19	Y. Shaya Fainman, Joseph Ford, William M. Mellette, Shayan Mookherjea, George Porter, Alex C. Snoeren, George Papan, Saman Saeedi, John Cunningham, Ashok Krishnamoorthy, Michael Gehl, Christopher T. DeRose, Paul S. Davids, Douglas C. Trotter, Andrew L. Starbuck, Chistina M. Dallo, Dana Hood, Andrew Pomerene, and Anthony Lentine, "LEED: A Lightwave Energy-Efficient Datacenter," in Proceedings of OFC/NFOEC, San Diego, CA., March 2019.
SoCC'18	Lixiang Ao, Liz Izhikevich, Geoffrey M. Voelker, and George Porter, "Sprocket: A Serverless Video Processing Framework," in Proceedings of the ACM Symposium on Cloud Computing (SoCC), Carlsbad, CA, October 2018.
ANCS'18	Rob McGuinness and George Porter, "Evaluating the Performance of Software NICs for 100-Gb/s Datacenter Traffic Control," in Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Ithaca, New York, July 2018.
ANCS'18	Shelby Thomas, Rob McGuinness, Geoffrey M. Voelker, and George Porter, "Dark Packets and the end of Network Scaling," in Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Ithaca, New York, July 2018.
HotCloud'18	Shelby Thomas, Geoffrey M. Voelker, and George Porter, "CacheCloud: Towards Speed-of-

Light Datacenter Communication,” in Proceedings of the 10th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud-X), Boston, MA, July 2018.

HPSR'18	William M. Mellette, Alex C. Snoeren, and George Porter, “Toward Optical Switching in the Data Center,” IEEE International Conference on High Performance Switching and Routing, Bucharest, Romania, June 2018.
SIGCOMM'17	William M. Mellette, Rob McGuinness, Arjun Roy, Alex Forencich, George Papen, Alex C. Snoeren, and George Porter, “RotorNet: A Scalable, Low-complexity, Optical Datacenter Network,” Proceedings of the ACM SIGCOMM Conference, Los Angeles, August 2017.
ANCS'17	Conglong Li, Matthew Mukerjee, David G. Andersen, Srinivasan Seshan, Michael Kaminsky, George Porter, and Alex C. Snoeren, “Using Indirect Routing to Recover from Network Traffic Scheduling Estimation Error,” Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Beijing, China, 2017.
NSDI'17	Sadjad Fouladi, Riad S. Wahby, Brennan Shacklett, Karhikeyan Vasuki Balasubramaniam, William Zeng, Rahul Bhalerao, Anirudh Sivaraman, George Porter, and Keith Winstein, “Encoding, Fast and Slow: Low-Latency Video Processing Using Thousands of Tiny Threads,” Proceedings of the 14th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI), Boston, MA, March 2017.
NSDI'17	Li Chen, Kai Chen, Joshua Zhu, Minlan Yu, George Porter, Chunming Qiao, and Shan Zhong, “Enabling Wide-spread Communications on Optical Fabric with MegaSwitch,” Proceedings of the 14th ACM/USENIX Symposium on Networked Systems Design and Implementation (NSDI), Boston, MA, March 2017.
Hotnets'16	William Mellette, Alex C. Snoeren, George Porter, “P-FatTree: A Multi-channel Datacenter Network Topology,” Proceedings of the Fifteenth ACM Workshop on Hot Topics in Networks, Atlanta, GA, Nov. 2016.
Nanocom'16	Yeshaiahu Fainman, Andrew Grieco, George Porter, and Jordan Davis, “Nanophotonic Devices and Circuits for Communication,” Proceedings of the Third Annual International Conference on Nanoscale Computing and Communication (ACM Nanocom '16), New York, NY, September 2016.
OFC'16	William Mellette, Glenn M. Schuster, George Porter, and Joseph Ford, “61 Port 1x6 Selector Switch for Data Center Networks,” Proceedings of the Optical Fiber Communication Conference, Anaheim, Calif., March 2016.
ANCS'16	Pramod Subba Rao and George Porter, “Is memory disaggregation feasible? A case study with Spark SQL,” Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Santa Clara, Calif., March 2016.
Quantum Electronics'15	Andrew Grieco, George Porter, and Yeshaiahu Fainman, “Integrated Space-division Multiplexer for Data Center Networks,” IEEE Journal of Selected Topics in Quantum Electronics, PP(99):1-1, October 2015.
CoNEXT'15	He Liu, Matthew K. Mukerjee, Conglong Li, Nicolas Feltman, George Papen, Stefan Savage, Srinivasan Seshan, Geoffrey M. Voelker, David G. Andersen, Michael Kaminsky, George Porter, and Alex C. Snoeren, “Scheduling Techniques for Hybrid Circuit/Packet Networks,” Proceedings of ACM CoNEXT, Heidelberg, Germany, December 2015.
SOCC'15	Michael Conley, Amin Vahdat, and George Porter, “Achieving Cost-efficient, Data-intensive Computing in the Cloud,” Proceedings of the ACM Symposium on Cloud Computing (SOCC'15), Kohala Coast, Hawaii, August 2015.
SIGCOMM'15	Arjun Roy, Hongyi Zeng, Jasmeet Bagga, George Porter, and Alex C. Snoeren, “Inside the Social Network's (Datacenter) Network,” Proceedings of the ACM SIGCOMM Conference, London, England, August 2015.
OMN'15	Andrew Grieco, George Porter, and Yeshaiahu Fainman, “Nanophotonics: Technology and Application,” Proceedings of the IEEE Optical MEMS and Nanophotonics Conference (OMN'15), Jerusalem, Israel, August 2015.
INFOCOM'15	Chang-Heng Wang, Tara Javidi, and George Porter, “Scheduling for Data Center Networks with Reconfiguration Delay,” Proceedings of the IEEE Infocom Conference (INFOCOM'15), Hong Kong, China, April 2015.

NSDI'14	He Liu, Feng Lu, Alex Forencich, Rishi Kapoor, Malveeka Tewari, Geoffrey M. Voelker, George Papen, Alex C. Snoeren, and George Porter, "Circuit Switching Under the Radar with REACToR," Proceedings of the 11th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2014), Seattle, WA, April 2014.
NSDI'14	Sivasankar Radhakrishnan, Yilong Geng, Vimalkumar Jeyakumar, Abdul Kabbani, George Porter, and Amin Vahdat, "SENIC: A Scalable NIC for End-Host Rate Limiting," Proceedings of the 11th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2014), Seattle, WA, April 2014.
Optics Express	Ryan Aguinaldo, Alex Forencich, Christopher DeRose, Anthony Lentine, Douglas C. Trotter, Yeshaiahu Fainman, George Porter, George Papen, and Shayan Mookherjea, "Wideband silicon-photonics thermo-optic switch in a wavelength-division multiplexed ring network," Optics Express, 22(7):8205—8218, April 2014.
Science	Yeshaiahu Fainman and George Porter, "Directing Data Center Traffic," Science 342(6155):202-203, 2013.
CoNEXT'13	Rishi Kapoor, Alex C. Snoeren, Geoffrey M. Voelker, and George Porter, "Bullet Trains: A study of NIC burst behavior at microsecond timescales," Proceedings of ACM CoNEXT, Santa Barbara, CA, December 2013. (Short paper)
CoNEXT'13	Radhika Niranjana Mysore, George Porter, and Amin Vahdat, "FasTrak: Enabling Express Lanes in Multi-Tenant Data Centers," Proceedings of ACM CoNEXT, Santa Barbara, CA, December 2013.
ANCS'13	Sivasankar Radhakrishnan, Malveeka Tewari, Rishi Kapoor, George Porter, and Amin Vahdat, "Dahu: Commodity Switches for Direct Connect Data Center Networks," Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), San Jose, Calif., October 2013.
IEEE PTL	Nathan Farrington, Alex Forencich, George Porter, Pang-Chen Sun, Joseph Ford, Yeshaiahu Fainman, George C. Papen, and Amin Vahdat, "A Multiport Microsecond Optical Circuit Switch for Data Center Networking," IEEE Photonics Technology Letters, 25(16):1589-1592, 2013.
SIGCOMM'13	George Porter, Richard Strong, Nathan Farrington, Alex Forencich, Pang-Chen Sun, Tajana Rosing, Yeshaiahu Fainman, George Papen, and Amin Vahdat, "Integrating Microsecond Circuit Switching into the Data Center," Proceedings of the ACM SIGCOMM Conference, Hong Kong, China, August 2013.
PS'13	Nathan Farrington, George Porter, Alex Forencich, Joseph Ford, Yeshaiahu Fainman, Amin Vahdat, and George Papen, "Optical/Electrical Hybrid Switching for Datacenter Communications," Proceedings of the 18th OptoElectronics and Communications Conference (OECC2013) / Photonics in Switching (PS2013), Kyoto, Japan, July 8-10, 2013.
HotCloud'13	Sivasankar Radhakrishnan, Vimalkumar Jeyakumar, Abdul Kabbani, George Porter, and Amin Vahdat, "NicPic: Scalable and Accurate End-Host Rate Limiting," Proceedings of the 5th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud-V), San Jose, CA, June 2013.
OFC'13	Nathan Farrington, Alex Forencich, Pang-Chen Sun, Shaya Fainman, Joe Ford, Amin Vahdat, George Porter, and George C. Papen, "A 10 us Hybrid Optical-Circuit/Electrical-Packet Network for Data Centers," Proceedings of OFC/NFOEC, Anaheim, CA, March 2013.
ACM TOCS	Alexander Rasmussen, George Porter, Michael Conley, Harsha Madhyastha, Radhika Niranjana Mysore, Alexander Pucher, and Amin Vahdat, "TritonSort: A Balanced and Energy-efficient Large-scale Sorting System," ACM Transactions on Computing Systems, vol. 31, no. 1, February 2013.
SoCC'12	Rishi Kapoor, George Porter, Malveeka Tewari, Geoffrey M. Voelker, and Amin Vahdat, "Chronos: Predictable Low Latency for Data Center Applications," Proceedings of the ACM Symposium on Cloud Computing (SOCC'12), San Jose, Calif., October 2012.
SoCC'12	Alexander Rasmussen, Michael Conley, Rishi Kapoor, Vinh The Lam, George Porter, and Amin Vahdat, "ThemisMR: An I/O-Efficient MapReduce," Proceedings of the ACM Symposium on Cloud Computing (SOCC'12), San Jose, Calif., October 2012.
ANCS'12	Mohammad Al-Fares, Rishi Kapoor, George Porter, Sambit Das, Hakim Weatherspoon, Balaji

	Prabhakar, and Amin Vahdat, "NetBump: User-extensible Active Queue Management with Bumps on the Wire," Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Austin, Texas, October 2012.
ANCS'12	James W. Anderson, Ryan Braud, Rishi Kapoor, George Porter, and Amin Vahdat, "xOMB: Extensible Open Middleboxes with Commodity Servers," Proceedings of the ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Austin, Texas, October 2012.
Hotnets'12	Nathan Farrington, George Porter, Yeshaiahu Fainman, George Papen, and Amin Vahdat, "Hunting Mice with Microsecond Circuit Switches," Proceedings of the 11th ACM Workshop on Hot Topics in Networks (HotNets-XI), Redmond, WA., October 2012.
Usenix ;login	Harsha V. Madhyastha, John C. McCullough, George Porter, Rishi Kapoor, Stefan Savage, Alex C. Snoeren, and Amin Vahdat, "scc: Cluster Storage Provisioning Informed by Application Characteristics and SLAs," USENIX ;login: 37(3), June 2012.
EuroSys'12	Bhanu C. Vattikonda, George Porter, Amin Vahdat, Alex C. Snoeren, "Practical TDMA for Datacenter Ethernet," Proceedings of the 7th European Conference in Computing Systems (EuroSys'12), Bern, Switzerland, Apr 10-13, 2012.
FAST'12	Harsha V. Madhyastha, John C. McCullough, George Porter, Rishi Kapoor, Stefan Savage, Alex C. Snoeren, Amin Vahdat, "scc: Cluster Storage Provisioning Informed by Application Characteristics and SLAs," Proceedings of the 10th USENIX Conference on File and Storage Technologies (FAST'12), San Jose, Calif., Feb 14-17, 2012.
SoCC'11	Hamid Bazzaz, Malveeka Tewari, Guohui Wang, George Porter, T. S. Eugene Ng, David Anderson, Michael Kaminsky, Michael Kozuch, Amin Vahdat, "Switching the Optical Divide: Fundamental Challenges for Hybrid Electrical/Optical Datacenter Networks," Proceedings of the 2nd ACM Symposium on Cloud Computing (SOCC'11), Cascais, Portugal, Oct 27-28, 2011.
NSDI'11	Alexander Rasmussen, George Porter, Michael Conley, Harsha Madhyastha, Radhika Mysore, Alexander Pucher, Amin Vahdat, "TritonSort: A Balanced Large-Scale Sorting System," Proceedings of the 8th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2011), Boston, MA, Mar 30-Apr 1, 2011.
SIGCOMM'10	Nathan Farrington, George Porter, Sivasankar Radhakrishnan, Hamid Bazzaz, Vikram Subramanya, Yeshaiahu Fainman, George Papen, Amin Vahdat, "A Hybrid Electrical/Optical Switch Architecture for Modular Data Centers," Proceedings of the ACM SIGCOMM 2010 Conference on Data Communication (SIGCOMM 2010), New Delhi, India, Aug 30-Sept 3, 2010.
IEEE Micro	Amin Vahdat, Mohammad Al-Fares, Nathan Farrington, Radhika Niranjana Mysore, George Porter, and Sivasankar Radhakrishnan, "Scale Out Networking in the Data Center", IEEE Micro, July/August 2010.
INM/WREN'10	Rodrigo Fonseca, Michael J. Freedman, George Porter, "Experiences with Tracing Causality in Networked Services," Internet Network Management Workshop / Workshop on Research on Enterprise Networking (INM/WREN 2010), San Jose, CA., April 2010.
SIGOPS OSR	George Porter, "Decoupling Storage and Computation in Hadoop with SuperDataNodes," SIGOPS Operating Systems Review. Vol. 44, Issue 2, April 2010.
LADIS'09	George Porter, "Towards Decoupling Storage and Computation in Hadoop with SuperDataNodes," Third ACM SIGOPS International Workshop on Large Scale Distributed Systems and Middleware (LADIS 2009), Big Sky, MT., October 2009.
NSDI'07	Rodrigo Fonseca, George Porter, Randy H. Katz, Scott Shenker, Ion Stoica, "X-Trace: A Pervasive Network Tracing Facility," Fourth USENIX Symposium on Networked Systems Design and Implementation (NSDI 2007), Cambridge, MA., April 2007.
ACM CACM	George Porter and Randy H. Katz, "Self Managed Systems and Services: Effective Web Service Load Balancing Through Statistical Monitoring," Communications of the ACM, Vol. 49, No. 3, March 2006.
SelfMan'05	George Porter and Randy H. Katz, "Effective 'Small Site' Web Load Balancing Through Statistical Monitoring," IEEE/IFIP International Workshop on Self-Managed Systems and Services (SelfMan 2005), Nice, France, May 2005.

NOMS'04	George Porter and Minwen Ji, "Delta Routing: Improving the Price-Performance of Hybrid Private Networks," IEEE/IFIP Network Operations & Management Symposium (NOMS 2004), Seoul, Korea, April 2004.
Pervasive 2002	B. Raman, S. Agarwal, Y. Chen, M. Caesar, W. Cui, P. Johanson, K. Lai, T. Lavian, S. Machiraju, Z. Mao, G. Porter, T. Roscoe, M. Seshadri, J. Shih, K. Sklower, L. Subramanian, T. Suzuki, S. Zhuang, A. D. Joseph, R. H. Katz, and I. Stoica, "The SAHARA Model for Service Composition Across Multiple Providers," International Conference on Pervasive Computing (Pervasive 2002), Zurich, Switzerland, August 2002, Invited Paper.
ACM TOPLAS	J Strother Moore and George Porter, "The apprentice challenge," ACM Transactions on Programming Languages and Systems (TOPLAS), Vol 24, No. 3, May 2002.
ECOOP'01	J Strother Moore, Robert Krug, Hanbing Liu, and George Porter, "Formal Models of Java at the JVM Level--a Survey from the ACL2 Perspective," Workshop on Formal Techniques for Java Programs / ECOOP 2001, Budapest Hungary, June 2001.
JVM'01	J Strother Moore and George Porter, "An Executable Formal Java Virtual Machine Thread Model," 2001 Java Virtual Machine USENIX Symposium (JVM 2001), Monterey, CA, Apr 2001.

Non-refereed publications and posters

George Porter, “See Straight Through Data Center Bandwidth Limitations with X-Rays,” Proceedings of TinyTOCS, April 2013.

George Porter, “TinyTOCS as an Experimental Laboratory,” in TinyTOCS, vol. 1, no. 1, Sept 2012.

Nathan Farrington, George Porter, Pang-Chen Sun, Alex Forenich, Joseph Ford, Yeshaiah Fainman, George Papen, and Amin Vahdat, “A Demonstration of Ultra-low Latency Data Center Optical Circuit Switching (Demo Session),” Proceedings of ACM SIGCOMM Conference, Helsinki, Finland, August 2012.

Harsha Madhyastha, George Porter, Meg Walraed-Sullivan, and Amin Vahdat, “TuneStore: A Tunable Storage System,” Sixth USENIX Symposium on Networked Systems Design and Implementation (NSDI 2009) Poster Session, Boston, MA., April 2009.

Randy H. Katz, George Porter, Scott Shenker, Ion Stoica, and Mel Tsai, “COPS: Quality of Service vs. Any Service at All,” International Workshop on Quality of Service (IWQoS 2005), Passau, Germany, June 2005. Invited Paper.

Rodrigo Fonseca, George Porter, Randy H. Katz, Scott Shenker, and Ion Stoica, “IP Options are not an option,” University of California, Berkeley, Berkeley, CA, Tech. Rep. UCB/EECS-2005-24, 2005.

George Porter and Randy H. Katz, “In-network Video Prioritization via iBox Classification Predicates,” University of California, Berkeley, Berkeley, CA, Tech. Rep. UCB/EECS-2005-1, 2005.

Patents

Andrew Grieco, Yeshaiah Fainman, and George Porter, “Multi-mode waveguide using space-division multiplexing,” US Patent Application US15/543,557 (filing date 01-16-2015).

William Mellette, Alex Snoeren, George Porter, and George Papen, “Optimizing Connectivity in Reconfigurable Networks,” US Patent Application US16/965,979 (filing date 01-31-2018), Status: Pending.

George Porter, Joseph Ford, Alex Snoeren, George Papen, and William Mellette, “Selector Switch,” US Patent Application US16/334,694 (filing date 09-19-2016), Status: Pending.

George Porter and William Mellette, “Method and apparatus for interfacing with a circuit switched network,” US Patent Application US16/629,781 (filing date 07-10-2017), Status: Pending.

George Porter and David Vengerov, “Method for determining whether to dynamically replicate data,” US Patent Application #12/649,466 (filing date Dec 30, 2009).

Minwen Ji and George Porter, “Method of Routing Packet,” US Patent #7,697,438 (Issued Apr 4, 2010).

Postdocs

- William Mellette (2016—2019)

Graduate Students

- Malcolm McSwain (M.S., 2021—)
- Rukshani Athapathu (Ph.D., 2021—)
- Amanda Tomlinson (Ph.D., 2022—)
- Keerthana Ganesan (M.S., 2019—2020)
- Lixiang Ao (Ph.D., 2016—2020; joint w/ Geoff Voelker)

- Shelby Thomas (Ph.D., 2016—2020)
- Rob McGuinness (Ph.D., 2015—2021)
- Yibo Guo (Ph.D., 2018—)
- Karthikeyan Vasuki Balasubramaniam (M.S., 2017)
- Rahul Bhalerao (M.S., 2015—2016)
- Vishal Parekh (M.S., 2015—2016)
- Mrinmayee Hingolikar (M.S., 2015—2016)
- Brajesh Kushwaha (M.S., 2015—2016)
- Pramod Subba-Rao (M.S., 2015)
- Malveeka Tewari (Ph.D., 2015, now at Google)
- Michael Conley (Ph.D., 2015; co/ with Amin Vadhat, now at Google)
- Rishi Kapoor (Ph.D., 2015, now at Google)
- Changkun Chen (M.S., 2011—2012)

Undergraduate Students

- Johnny Padungyothee (2020—2021)
- Josh Santillan (2020—2021)
- Oscar Acevedo (2020—2021)
- Prothit Halder (2020—2021)
- Christina Leung (2019—2020)
- Keshav Mittal (2019—2020)
- Malcolm Mcswain (2019—2020)
- Yana Pyryalina (2019—2020)
- Elizabeth Farkas (2017—2018)
- Elizabeth Guerrero (2017—2018)
- Adrian Mendoza (2017—2018)
- Zheng Hao Tang (2017—2018)

Awards

2023	Recipient, UC San Diego 28th Annual Inclusive Excellence Award
2017	USENIX NSDI 10-year Test of Time award
2016	Recipient of the NSF CAREER award
2012 and 2013	Recipient of a Google Focused Research Award, Networking
2011	NetApp Faculty Fellowship
2001	NSF Graduate Fellowship Honorable Mention in Computer Sciences
2001	Special Departmental Honors, Dept. of Computer Sciences, University of Texas at Austin
2001	Dean's Honored Graduate, College of Natural Sciences, University of Texas at Austin
2001	Phi Beta Kappa
2000	Tenpas Scholarship in Computer Sciences
1997 – 2001	The Williams Companies Merit Scholarship
1997 – 2001	The University of Texas at Austin Merit Scholarship
1997	National Merit Finalist
1997	Tandy Corporation Award for Excellence in Mathematics, Science, and Computer Science

Support

Dates	Role	Source/Agency	Type	Amount
2023—2024	PI	Cisco Systems	Grant	\$160k
2021	PI	Facebook faculty research program	Gift	\$50k

Updated: 8/9/23

2019-2022	Co-PI	National Science Foundation: “CNS Core: Small: Designing Efficient Cloud Datacenter Network Fabrics”	Grant	\$500k
2018-2021	PI	National Science Foundation: “CSR: Medium: Collaborative Research: GPλ: General-Purpose Lambda Computing”	Grant	\$400k
2016-2017	Co-PI	Dept of Energy ARPA-e: “LEED: A Lightware Energy-Efficient Datacenter”	Grant	\$3.8M
2016	PI	Facebook faculty research program	Gift	\$30k
2016-2018	PI	National Science Foundation: “NeTS: Medium: Improving Network Performance and Efficiency through Multi-Channel Network Links	Grant	\$1.2M
2016-2021	PI	National Science Foundation: “CAREER: A Scalable Multiplane Data Center Network”	Grant	\$700k
2015	PI	Facebook faculty research program	Gift	\$30k
2014-2015	PI	National Science Foundation: “NeTS: Large: Collaborative Research: HCPN: Hybrid Circuit/Packet Networking” (Research Experiences for Undergraduates)	Grant	\$16k
2014	PI	Amazon: AWS in Education Grant	Gift	\$7k
2013-2014	PI	Microsoft: “High Performance Network Stack Design”	Gift	\$37k
2013-2016	PI	National Science Foundation: “NeTS:Large:Collaborative Research:HCPN:Hybrid Circuit/Packet Networking”	Grant	\$1.8M
2013-2014	Co-PI	Google, Inc.: “Mordia: A Microsecond Optical Research Datacenter Interconnect Architecture”	Gift	\$160k
2012-2013	Co-PI	Google, Inc.: “Mordia: A Microsecond Optical Research Datacenter Interconnect Architecture”	Gift	\$160k
2012-2013	Co-PI	Ericsson: “Optical switching in datacenters”	Gift	\$50k
2012-2013	Co-PI	Cisco Systems: “Microsecond Optical Research Datacenter Interconnect Architecture”	Gift	\$75k
2011-2014	PI	National Science Foundation: “CSR:Small:Highly Efficient, Pipeline-oriented Data-intensive Scalable Computing”	Grant	\$350k
2011	PI	NetApp Faculty Fellowship	Gift	\$40k
2011-2012	PI	Center for Networked Systems / Cisco Systems: “Incorporating Networked Storage within Highly Efficient Data-intensive Computing”	Gift	\$100k
2010—2015	PI	National Science Foundation: “CSR:Medium:Scale, Isolation, and Performance in Data Center Networks”	Grant	\$750k
2010-2012	PI	Center for Networked Systems / Cisco Systems: “TritonSort: A Balanced Sorting System”	Gift	\$148k
2010-2012	Co-PI	Google, Inc.: “Mordia: A Microsecond Optical Research Datacenter Interconnect Architecture”	Gift	\$250k
		Subtotal (PI):		\$5.81M
		Subtotal (Co-PI):		\$5.0M
		Total (PI and Co-PI):		\$10.81M

Service

Affiliated faculty, UC San Diego Environmental Studies Minor: 2023—Present

Creator and PC Co-Chair, NetZero 2023: 1st Workshop on NetZero Carbon Computing: 2023

Creator and PC Co-Chair, HotCarbon Workshop on Sustainable Computer Systems: 2022

Updated: 8/9/23

SortBenchmark.org Benchmark committee member (2021—)

UCSD Jacobs School of Engineering Excellence Committee (2021—2022)

University Committee on Academic Computing and Communications (UCACC), 2022—2023

PC Member, Computing Within Limits Conference, 2022—Present.

USENIX NSDI Steering Committee, 2021—Present.

ACM Sigcomm OptSys Workshop Organizing Committee, 2019-2021.

NSF grant selection panel member, 2014—2015, 2018—2019

Steering committee: NSF Workshop on Scaling Terabit Networks: Breaking Through Capacity Barriers and Lowering Cost with New Architectures and Technologies (2013)

PC Co-Chair: NSDI'2020, HotCloud 2013

Poster session co-chair, OSDI 2016

Program Committees: NSDI 2022, NSDI 2021, NSDI 2019, NSDI 2018, HotConNet 2017, ASPLOS 2017, NSDI 2017, OSDI 2016, HotNets 2015, NSDI 2015, SIGCOMM 2015, NSDI 2014, SoCC 2013, LADIS 2013, ANCS 2013, NSDI 2013, OSDI 2012 (External), HotCloud 2012, 2010 ISSRE (Fast Abstracts)

Other Committees: SOSP Travel Grant committee 2013, OSDI poster session co-chair 2016, EuroSys Doctoral Workshop committee, 2017.

Journal Editing: Co-editor, IEEE Micro special issue on “Novel architectures for high-speed datacenter network fabrics” (2014)

Journal Reviewing: OSA Optics Express (2013), ACM Computer Communication Review 2012, IEEE/ACM Transactions on Networking (2011 and 2012), IEEE Journal on Selected Areas in Communications (2009), International Journal of Information Security (2008 and 2009), IEEE Transactions on Network and Service Management (2008), Annual Computer Security Applications Conference (ACSAC) (2006)

Ph.D. Committee: Rajdeep Das (2022), Lixiang Ao (2022), Chengcheng Xiang (2020), Changheng Wang (2017), Sergio Miguel Martin (2017), Jian Xu (2016), Jing Li (2016), Joe Deblasio (2015), Mark Gahagan (2015), Yang Liu (2015), Michael Wei (2014), Jing Zheng (2013), Richard Strong (2013), He (Lonnie) Liu (2013), Michael Conley (2013), Sivasankar Radhakrishnan (2013), Jun Rong Ong (2013), Ryan Aguinaldo (2012)

Ph.D. Research Exam Committee: Gabriel Marcano (2022), Michael Conley (2012), Sivasankar Radhakrishnan (2012), Neha Chachra (2012), He Liu (2012), Alexander Eisner (2012)

2012—Present UCSD CSE Ph.D. Admissions Committee

2010—2015 NSF CIAN Working Group 1 (Datacenter) Coordinator

Presentations

2023 “A metric for factoring data movement into chasing the sun”,

NetZero 2023: 1st Workshop on NetZero Carbon Computing, Feb 2023.

2023 “Centering the environmental impact of computing in computer science teaching and research”,

- Series on Ethics in Science and Technology, Osher Lifelong Learning Institute, Feb. 2023.
- 2022 “Datacenters and Cloud Platforms: A Sustainable Future?”, ACM SIGCAS Showcase, Sept. 2022.
- 2022 “Centering the Environmental Impact of Computing in CS teaching and research”,
Exploring Ethics Forums, The Center for Ethics in Science & Technology, March 2022.
- 2021 National Science Foundation CAREER award workshop panelist and speaker.
- 2021 ACM SigEnergy 1st Workshop on Climate Sustainability, and Society Panelist.
- 2021 Google Carbon-Free Computing Workshop Panelist.
- 2021 UCSD Online Ph.D. Advising Panelist.
- 2021 Computing Landscapes for Environmental Accountability and Responsibility Panelist, ISCA 2021.
- 2021 UCSD Seventh College Freshman Seminar Guest Lecturer.
- 2021 OFC Optical Switching Panelist.
- 2021 “The Environmental Impact of Modern Computing” Guest Lecture,
University of San Diego Theater 494: “Telling the Story of Science”
- 2021 “Introducing Optical Switching into Datacenter Networks”, Guest Lecture,
University of Washington Computer Science 561: “Graduate Networking”
- 2020 “The environmental impact of cloud computing”, Seventh College Lunch and Learn.
- 2019 National Science Foundation CAREER award workshop panelist and speaker.
- 2019 “The Future of Datacenter Architectures”, Western Digital Strategy Council Meeting.
- 2017 “Datacenter Networking in the Era of Plentiful Bandwidth,” Photonics 2017, Austin, TX.
- 2016 “Data-intensive Video Computing: Low-Latency processing using thousands of tiny threads,”
Amazon, Seattle, WA.
- 2016 “Data-intensive Video Computing: Low-Latency processing using thousands of tiny threads,”
Google YouTube, Mountain View, CA.
- 2015 “Building IO-efficient Data-intensive Applications,” Randy@60 Symposium, UC Berkeley.
- 2015 “Data Center Networks (DCN),” SIGCOMM 2015 Topic Preview Sessions, London.
- 2014 “Going beyond scalability to build resource-efficient data-intensive applications,”
UC Berkeley AMPLab Seminar, Berkeley, CA
- 2013 “Integrating Microsecond Circuit Switching into the Data Center,”
Microsoft Research, Redmond, WA
- 2013 “Themis: I/O Efficient MapReduce,” UCSD BigData Workshop, La Jolla, CA
- 2013 “Integrating Microsecond Circuit Switching into the Data Center,”
SIGCOMM 2013, Hong Kong
- 2013 “Themis: An I/O Efficient MapReduce Implementation,” Google, Inc., Mountain View, CA
- 2012 “Towards Balanced, Data-intensive Scalable Computing,” University of Southern California
CSE Departmental Colloquium, Los Angeles, CA.
- 2011 “Towards Balanced, Data-intensive Scalable Computing,” University of Washington CSE
Departmental Colloquium, Seattle, WA.
- 2011 “Achieving High Performance, Energy-efficient, Data-intensive computing through
cross-resource balance,” HP Labs, Palo Alto, CA
- 2011 “NetBump: User-extensible Active Queue Management with ‘Bumps on the wire,’”
Stanford University
- 2010 “Helios: A Hybrid Electrical/Optical Switch Architecture for Modular Data Centers”,
Computer Sciences Departmental Colloquium, University of Texas at Austin.
- 2010 “Efficient Data-intensive Scalable Computing,” HP Labs, Palo Alto, CA
- 2010 “Efficiency and Scale in Datacenter Networks,”
Toronto Networking Seminar Series, University of Toronto
- 2009 “Towards Decoupling Storage and Computation in Hadoop with SuperDataNodes,”
LADIS 2009, Big Sky, MT.
- 2009 “Using Grid Engine to Power Hadoop Applications,” CommunityOne, San Francisco, CA
- 2008 “Improving Virtualization and Performance Tracing of Hadoop with OpenSolaris,”
Hadoop Camp (ApacheCon), New Orleans, LA
- 2008 “X-Trace: A Pervasive Network Tracing Framework,” Sun Labs, Menlo Park, CA
- 2007 “X-Trace: A Pervasive Network Tracing Framework,” Google, Inc., Mountain View, CA

- 2007 “X-Trace: A Pervasive Network Tracing Framework,” Splunk, Inc. San Francisco, CA
- 2007 “X-Trace: A Pervasive Network Tracing Framework,” Facebook, Inc. Palo Alto, CA
- 2007 “Berkeley RAD Lab Overview and X-Trace Presentation,”
Cisco Central Technology Group, San Jose, CA
- 2007 “Berkeley RAD Lab Overview and X-Trace Presentation,”
Nortel Networks, Santa Clara, CA
- 2005 “Effective 'Small Site' Web Load Balancing Through Statistical Monitoring,”
SelfMan Workshop, Nice, France
- 2004 “Delta Routing: Improving Price-Performance of Hybrid Private Networks,”
IEEE/IFIP Network Operations and Management Symposium, Seoul, Korea
- 2003 “Programmable Network Testbed,”
NTT Multimedia Communications Laboratories, Palo Alto, CA
- 2003 “Overlays and Active Services for Inter-networked Storage,”
University of California CITRIS Poster Session, Santa Cruz, CA