Brent E. Stephens

Contact Information

7382 Computer Sciences
Computer Science Department
University of Wisconsin, Madison
1210 West Dayton St.
Madison, WI 53706

Phone: (503) 803-7610
E-mail: brentstephens@cs.wisc.edu
Web: http://www.cs.wisc.edu/~brentstephens/

Research Interests

Data Center Networking, Operating Systems, Distributed Systems, Network Measurement, Transport Protocols, Virtualization, Computer Architecture

Education

Rice University, Houston, Texas USA
George R. Brown School of Engineering

Ph.D., Computer Science, Dec 2015
- Thesis Topic: "Handling Congestion and Routing Failures in Data Center Networking"
- Advisors: Alan L. Cox and Scott Rixner

M.S., Computer Science, May 2012
- Thesis Topic: "Designing Scalable Networks for Future Large Datacenters"
- Advisors: Alan L. Cox and Scott Rixner

B.S., Electrical Engineering, May 2009
- GPA in Major: 3.94/4.00

Honors and Awards

IBM Ph.D. Fellowship, 2012 - 2014

Texas Instruments Fellowship, August 2009 - August 2015

Rice University: graduated Magna Cum Laude, May 2009

Academic Experience

University of Wisconsin, Madison, Madison, Wisconsin USA

Post-doctoral Research Associate **September 2015 - present**
Researched novel algorithms and abstractions for Operating Systems and NICs to improve scheduling of network traffic.

Rice University, Houston, Texas USA

Research Assistant **August 2009 - August 2015**
Researched the design of new scalable Ethernet replacements and new deadlock-free and fault-tolerant routing algorithms.

Graduate Teaching Assistant **August 2009 - May 2012**
Duties included developing course materials for labs, leading labs, sharing administrative responsibilities, and oversight of teaching assistants and graders. Given the distinction: "With approval of Dean of Engineering."
- COMP 221: Introduction to Computer Systems
- COMP 421: Operating Systems and Concurrent Programming

Undergraduate Teaching Assistant **August 2006 - May 2007**
Led weekly recitation sections for two different introductory computer science courses.
- COMP 201: Object-Oriented Programming 1
- COMP 202: Principles of Object-Oriented Programming

Professional Experience

IBM Research, Austin, TX USA

Research Intern **May 2011 – September 2011, July 2012 – September 2012, July 2013 – October 2013**
- Contact: John Carter - retrac@us.ibm.com; (512) 286-5584

Valhalla: Rice's Graduate Student Pub (valhalla.rice.edu), Houston, TX USA

Manager **May 2011 – May 2012**

Successfully managed an on-campus business with over 90 volunteer employees, maintained and priced inventory, attended board meetings, introduced new events, and turned a profit.

Intel Corporation, Hillsboro, Oregon USA

Software Development Intern **May 2008 - August 2008**

ViaSat Inc., Carlsbad, California USA

Software Development Intern **May 2007 - August 2007**

Professional Activities

NSF Review Panelist: 1 panel in 2015 and 1 panel in 2016.

Conference Program Committee Member: Usenix ATC 2018 and ACM APNet 2018.

Professional Organization Memberships: USENIX (2016 - Present), ACM (2016 - Present).

Publications

K. He, W. Qin, Q. Zhang, W. Wu, J. Yang, T. Pan, C. Hu, J. Zhang, B. Stephens, A. Akella, and Y. Zhang. "Low Latency Software Rate Limiters for Cloud Networks." *APNet 2017*, Hong Kong, China (August 2017)

B. Stephens, A. Singhvi, A. Akella, and M. Swift. "Titan: Fair Packet Scheduling for Commodity Multiqueue NICs." *Usenix ATC 2017*, Santa Clara, CA (July 2017)

B. Stephens and A.L. Cox. "Deadlock-Free Local Fast Failover for Arbitrary Data Center Networks." *INFOCOM 2016*, San Francisco, CA (April 2016)

B. Stephens, A.L. Cox, and S. Rixner. "Scalable Multi-Failure Fast Failover via Forwarding Table Compression." *SOSR 2016*, Santa Clara, CA (March 2016)

J. Rasley, B. Stephens, C. Dixon, E. Rozner, W. Felter, K. Agarwal, J. Carter, R. Fonseca. "Planck: Millisecond-scale Monitoring and Control for Commodity Networks." *SIGCOMM 2014*, Chicago, IL (August 2014)

B. Stephens, A.L. Cox, A. Singla, J. Carter, C. Dixon, W. Felter. "Practical DCB for Improved Data Center Networks." *INFOCOM 2014*, Toronto, ON (April 2014)

J. Rasley, B. Stephens, C. Dixon, E. Rozner, W. Felter, K. Agarwal, J. Carter, R. Fonseca. "Low-latency Network Monitoring via Oversubscribed Port Mirroring." *ONS 2014*, Santa Clara, CA (March 2014)

B. Stephens A.L. Cox, S. Rixner. "Plinko: Building Provably Resilient Forwarding Tables." *HotNets 2013*, College Park, MD (November 2013)

B. Stephens, A.L. Cox, W. Felter, C. Dixon, J. Carter. "PAST: Scalable Ethernet for Data Centers." *CoNEXT 2012*, Nice, France (December 2012).

B. Stephens, A.L. Cox, S. Rixner, T.S.E. Ng. 2011. "A Scalability Study of Enterprise Network Architectures." *ANCS 2011*, New York, NY (October 2011)

J. Shafer, B. Stephens, M. Foss, S. Rixner, A.L. Cox. 2010. "Axon: A Flexible Substrate for Source-routed Ethernet." *ANCS 2010*, San Diego, CA (October 2010)

References

Aditya Akella
Professor, Computer Science
University of Wisconsin, Madison
akella@cs.wisc.edu
608-890-0122
7379 Computer Sciences
Computer Sciences Department
University of Wisconsin-Madison
1210 West Dayton Street
Madison, WI 53706-1685 USA

Michael Swift
Professor, Computer Science
University of Wisconsin, Madison
swift@cs.wisc.edu
608-890-0131
7369 Computer Sciences
Computer Sciences Department
University of Wisconsin-Madison
1210 West Dayton Street
Madison, WI 53706-1685 USA

Alan L. Cox
Professor, Computer Science
Rice University
alc@rice.edu
713-348-5730
P.O. Box 1892, MS 132
Houston, TX 77251 USA

Scott Rixner
Professor, Computer Science
Rice University
rixner@rice.edu
713-348-6353
P.O. Box 1892, MS 132
Houston, TX 77251 USA