Balakrishnan Chandrasekaran

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EDUCATION	**Duke University** Durham (NC), US

EDUCATION

Duke University Durham (NC), US
Ph.D., Department of Computer Science August 2010 – November 2016
Dissertation Title: *Head into the Cloud: An Analysis of the Emerging Cloud Infrastructure*
Dissertation Advisor: Bruce MacDowell Maggs

Washington University in St. Louis St. Louis (MO), US
Master of Science in Computer Science August 2006 – May 2008

Anna University, S.R.M. Engineering College Chennai (TN), IN
Bachelor of Technology in Information Technology August 2001 – May 2005

PREPRINTS

"*Dissecting Latency in the Internet's Fiber Infrastructure*," I. N. Bozkurt, W. Aqeel, D. Bhattacherjee, B. Chandrasekaran, P. B. Godfrey, G. Laughlin, B. M. Maggs, and A. Singla, arXiv:1811.10737; Computing Research Repository (CoRR), November 2018.

"*cISP: A Speed-of-Light Internet Service Provider*," D. Bhattacherjee, S. A. Jyothi, I. N. Bozkurt, M. Tirmazi, W. Aqeel, A. Aguirre, B. Chandrasekaran, P. Brighten Godfrey, G. Laughlin, B. Maggs, and A. Singla, arXiv:1809.10897; Computing Research Repository (CoRR), September 2018.

REFEREED PUBLICATIONS

"*A Deeper Look at Web Content Availability and Consistency over HTTP/S*," M. T. Paracha, B. Chandrasekaran, D. Choffnes, D. Levin, *[To appear]* In Proceedings of the International Conference on Traffic Monitoring and Analysis (TMA), June 2020.

"*Untangling Header Bidding Lore: Some myths, some truths, and some hope*," W. Aqeel, D. Bhattacherjee, B. Chandrasekaran, P. Brighten Godfrey, G. Laughlin, B. Maggs, and A. Singla, In Proceedings of the Passive and Active Measurement Conference (PAM), March 2020. *Winner of "Best Data Set Award."*

"*P4-enabled Network-assisted Congestion Feedback: A Case for NACKs*," A. Feldmann, B. Chandrasekaran, S. Fathalli, and E. N. Weyulu, Stanford Workshop on Buffer Sizing (BS), December 2019.

"*On Mapping the Interconnections in Today's Internet*," R. Motamedi, B. Yeganeh, B. Chandrasekaran, R. Rejaie, B. M. Maggs, W. Willinger, In IEEE/ACM Transactions on Networking (TON), Volume 27, Issue 5, October 2019.

"*RPKI is Coming of Age: A Longitudinal Study of RPKI Deployment and Invalid Route Origins*," T. Chung, E. Aben, T. Bruijnzeels, B. Chandrasekaran, D. Choffnes, D. Levin and B. M. Maggs, A. Mislove, R. van Rijswik-Deij, J. Rula, and N. Sullivan, In Proceedings of the ACM Internet Measurement Conference (IMC), November 2019.

"*The QUIC Fix for Optimal Video Streaming*," M. Palmer, T. Krüger, B. Chandrasekaran, and A. Feldmann, In Proceedings of the ACM CoNEXT 2018 Workshop on the Evolution, Performance, and Interoperability of QUIC (EPIQ), December 2018.

"*Gearing up for the 21ˢᵗ century space race*," D. Bhattacherjee, W. Aqeel, I. N. Bozkurt; A. Aguirre, B. Chandrasekaran, P. Brighten Godfrey, G. Laughlin, B. Maggs, and A. Singla, In Proceedings of the Seventeenth ACM Workshop on Hot Topics in Networks (HotNets), November 2018.

"*Is the Web Ready for OCSP Must-Staple?*," T. Chung, J. Lok, B. Chandrasekaran, D. Choffnes, D. Levin and B. M. Maggs, A. Mislove, J. Rula, N. Sullivan, and C. Wilson, In Proceedings of the ACM Internet Measurement Conference (IMC), October 2018.

"*Sounding the Bell for Improving Internet Security,*" T. Benson and B. Chandrasekaran, In Proceedings of the First Workshop on Internet of Things Security and Privacy (IoT S&P), November 2017.

"*A Longitudinal, End-to-End View of the DNSSEC Ecosystem,*" T. Chung, R. van Rijswik-Deij, B. Chandrasekaran, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, and C. Wilson, In Proceedings of the 26st USENIX Security Symposium, August 2017. *Winner of "Distinguished Paper Award."*

[Poster] "*Delorean: Using Time Travel to Avoid Bugs and Failures in SDN Applications,*" Z. Zhou, T. Benson, M. Canini, and B. Chandrasekaran, *In Proceedings of the ACM Symposium on SDN Research (SOSR),* April 2017.

"*Why is the Internet so slow!?,*" I. N. Bozkurt, A. Aguirre, B. Chandrasekaran, P. Brighten Godfrey, G. Laughlin, B. Maggs, and A. Singla, In Proceedings of the Passive and Active Measurement Conference (PAM), March 2017. *Winner of "Best Data Set Award."*

"*Reducing Latency through Page-aware Management of Web Objects by Content Delivery Networks,*" S. Narayanan, Y. Nam, A. Sivakumar, B. Chandrasekaran, B. Maggs, and S. Rao, In Proceedings of the ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Science, June 2016.

"*Isolating and Tolerating SDN Application Failures with LegoSDN,*" B. Chandrasekaran, B. Tschaen, and T. Benson, In Proceedings of the ACM Symposium on SDN Research (SOSR), March 2016.

"*A Server-to-Server View of the Internet,*" B. Chandrasekaran, G. Smaragdakis, A. Berger, M. Luckie, and K.C. Ng, In Proceedings of the ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT), December 2015.

"*Back-Office Web Traffic on the Internet,*" E. Pujol, P. Richter, B. Chandrasekaran, G. Smaragdakis, A. Feldmann, B. M. Maggs, and K.C. Ng, In Proceedings of the ACM Internet Measurement Conference (IMC), November 2014.

"*The Internet at the Speed of Light,*" A. Singla, B. Chandrasekaran, P. Brighten Godfrey, and B. Maggs, In Proceedings of the Thirteenth ACM Workshop on Hot Topics in Networks (HotNets), October 2014.

"*Tolerating SDN Application Failures with LegoSDN,*" B. Chandrasekaran and T. Benson, In Proceedings of the Thirteenth ACM Workshop on Hot Topics in Networks (HotNets), October 2014.

[Poster] "*Tolerating SDN Application Failures with LegoSDN,*" B. Chandrasekaran and T. Benson, *In Proceedings of the Third ACM Workshop on Hot Topics in Software Defined Networking (HotSDN),* August 2014.

"*Curing Regular Expressions Matching Algorithms from Insomnia, Amnesia, and Acalculia,*" S. Kumar, B. Chandrasekaran, J. Turner, and G. Varghese, In Proceedings of the 3rd ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), November 2007.

TECHNICAL REPORTS

"*On the geography of X-Connects,*" R. Motamedi, B. Chandrasekaran, B. Maggs, R. Rejaie, and W. Willinger, Oregon University, Technical Report CIS-TR-2014-1, May 2015.

"*Alidade: IP Geolocation without Active Probing,*" B. Chandrasekaran, M. Bai, M. Schoenfield, A. Berger, N. Caruso, G. Economou, S. Gilliss, B. Maggs, K. Moses, D. Duff, K.C. Ng, E. G. Sirer, R. Weber, and B. Wong, Duke University, Technical Report CS-TR-2015-001, January 2015.

OTHER PUBLICATIONS

"*A Longitudinal, End-to-End View of the DNSSEC Ecosystem,*" T. Chung, R. van Rijswik-Deij, B. Chandrasekaran, D. Choffnes, D. Levin, B. M. Maggs, A. Mislove, and C. Wilson, ;login: The USENIX Magazine, Winter 2017, Vol. 42, No. 4, 2017.

[Invited paper] "*A Universal Approach to Data Center Design,*" A. Akella, T. Benson, B. Chandrasekaran, C. Huang, B.

Maggs and D. Maltz, *In Proceedings of the* 16*th International Conference on Distributed Computing and Networking (ICDCN)*, January 2015.

<table>
<tr><td>In the news</td><td>The *MyAdPrice* extension was identified as one of the best browser extensions to obtain insights into header bidding at headerbidding.co (on Jan. 3, 2020) and bannertag.com (on Jun. 25, 2019).</td></tr>
</table>

The *Internet at the Speed of Light* project was featured on the front page of San Jose Mercury News (on Nov. 30, 2014), and IT World (on May 9, 2015), and subsequently republished in a few other news outlets: Contra Costa Times (on Mar. 17, 2015), The Bulletin (on Dec. 6, 2014), Valley News (On Aug. 12, 2014), and Star Tribune (on Dec. 13, 2014).

Talks

A Two-Part Tale on Network Congestion   March 6, 2020
Aalto University, Espoo, FI

The Server-to-Server Landscape: insights, opportunities, and challenges   October 22, 2019
Chalmers University, Göteburg, SE

The Server-to-Server Landscape: insights, opportunities, and challenges   March 14, 2019
The University of Edinburgh, Edinburgh, UK

Solving the Internet Latency Problem: One Piece at a Time   December 6, 2017
KTH Royal Institute of Technology, Stockholm, SE

Fail without fear: On a Novel Fault-Tolerant SDN Controller Architecture   April 14, 2016
IBM T.J. Watson Research Center, Yorktown Heights (NY), US

Isolating and Tolerating SDN Application Failures with LegoSDN   March 14, 2016
ACM Symposium on SDN Research (SOSR), Santa Clara (CA), US

A Server-to-Server View of the Internet   December 3, 2015
ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT), Heidelberg, DE

Tolerating SDN Application Failures with LegoSDN   October 28, 2014
Thirteenth ACM Workshop on Hot Topics in Networks (HotNets), Los Angeles (CA), US

Peeling through the Structural Layers of the Internet   June 13, 2011
Internet MRA Reunion Conference II, IPAM, UCLA, Lake Arrowhead (CA), US

Employment

Senior Researcher, *Max-Planck-Institut für Informatik*   Saarbrücken, DE
Group: Networked Systems   August 2019 – *

Postdoctoral Scholar, *Max-Planck-Institut für Informatik*   Saarbrücken, DE
Mentor: Anja Feldmann   March 2018 – July 2019

Postdoctoral Scholar, *Technische Universität Berlin*   Berlin, DE
Mentor: Anja Feldmann   December 2016 – February 2018

Graduate Research Assistant, *Duke University*   Durham (NC), US
Advisor: Bruce MacDowell Maggs   August 2010 - December 2016

Visiting Researcher, *Technische Universität Berlin.*   Berlin, DE
Mentor: Anja Feldmann   June 2015 - September 2015

Intern, Custom Engineering, *Akamai Technologies, Inc.*   Cambridge (MA), US

Mentors: Arthur Berger, Keung-Chi Ng, David Duff   June 2014 - August 2014

Intern, Service Quality Management, *AT&T Research Labs.*   Florham Park (NJ), US
Mentors: He Yan, Nicholas Duffield   June 2013 - August 2013

Intern, Custom Engineering, *Akamai Technologies, Inc.*   Cambridge (MA), US
Mentors: Arthur Berger, Keung-Chi Ng, David Duff   May 2012 - August 2012

Intern, Custom Engineering, *Akamai Technologies, Inc.*   Cambridge (MA), US
Mentors: Arthur Berger, Keung-Chi Ng, David Duff   May 2011 - August 2011

Sr. Technical Consultant, *Perficient, Inc.*   Denver (CO), US
Supervisor: George Hunter   June 2008 - July 2010

Intern, Premedia Group, *Vertis Communications, Inc.*   Earth City (MO), US
Mentor: Brian Costlow   May 2007 - August 2007

Associate Software Engineer, *Torry Harris Business Solutions, Pvt. Ltd.*   Bangalore (KA), India
Supervisors: Meenakshi Sharma, Srivathsa Vijay   June 2005 - June 2006

COMMUNITY SERVICE

Program Committee Member
Passive and Active Measurement Conference (PAM), 2020
ACM Symposium on SDN Research (SOSR), 2019
ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT), 2019
Global Internet Symposium (GI), 2020

External Reviewer
In IEEE/ACM Transactions on Networking (TON), 2019
International Federation for Information Processing (IFIP) Networking Conference, 2017

TEACHING

Data Networks
With Anja Feldmann
Universität des Saarlandes, Saarbrücken, DE
Graduate-level course, Winter Semester   2018-19

Guest lecture on Sketches and Sampling, **Network Algorithms**
Instructor: Georgios Smaragdakis
Technische Universität Berlin, Berlin, DE
Graduate-level course, Winter Semester   2017-18

Internet Measurements
With Anja Feldmann
Technische Universität Berlin, Berlin, DE
Graduate-level course, Summer Semester   2017

Guest lecture on Web/HTTP & DNS, **Network Protocol Architecture**
Instructor: Anja Feldmann
Technische Universität Berlin, Berlin, DE
Graduate-level course, Winter Semester   2016-17

Guest lecture on Hadoop, **Distributed Systems (CPS 512.01)**

Instructor: Bruce MacDowell Maggs
Duke University, Durham (NC), US
Graduate-level course, Spring Semester 2015, 2014

Teaching Assistant, **Operating Systems (CPS 310)**
Instructor: Jeffrey S. Chase
Duke University, Durham (NC), US
Undergraduate-level course, Fall Semester 2013

Teaching Assistant, **Discrete Mathematics (CPS 102.1)**
Instructor: Bruce MacDowell Maggs
Duke University, Durham (NC), US
Undergraduate-level course, Fall Semester 2011

Teaching Assistant, **Programming Design and Analysis II (CPS 100E.2)**
Instructor: Susan Rodger
Duke University, Durham (NC), US
Undergraduate-level course, Spring Semester 2011