# Balakrishnan Chandrasekaran

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## Education

**Duke University** — Durham (NC), US
*Ph.D., Department of Computer Science* — August 2010 — November 2016

**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

## Employment

**Senior Researcher** — August 2019 – ∗
*Max-Planck-Institut für Informatik*, Saarbrücken, DE

**Postdoctoral Scholar** — March 2018 – July 2019
*Max-Planck-Institut für Informatik*, Saarbrücken, DE

**Postdoctoral Scholar** — December 2016 — February 2018
*Technische Universität Berlin*, Berlin, DE

**Graduate Research Assistant** — August 2010 – December 2016
*Duke University*, Durham (NC), US

**Visiting Researcher** — June – September 2015
*Technische Universität Berlin.*, Berlin, DE

**Intern, Custom Engineering** — May – August 2011 & 2012, June – August 2014
*Akamai Technologies, Inc.*, Cambridge (MA), US

**Intern, Service Quality Management** — June – August 2013
*AT&T Research Labs.*, Florham Park (NJ), US

**Sr. Technical Consultant** — June 2008 – July 2010
*Perficient, Inc.*, Denver (CO), US

**Intern, Premedia Group** — May – August 2007
*Vertis Communications, Inc.*, Earth City (MO), US

**Associate Software Engineer** — June 2005 – June 2006
*Torry Harris Business Solutions, Pvt. Ltd.*, Bangalore (KA), IN

## 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

§ "On Landing and Internal Pages: The Strange Case of Jekyll and Hyde in Internet Measurement," W. Aqeel, B. Chandrasekaran, A. Feldmann, B. Maggs, *[To appear]* *In Proceedings of the ACM Internet Measurement Conference (IMC)*, August 2020.

§ "Demystifying the Messaging Platforms' Ecosystem Through the Lens of Twitter," M. Hoseini, P. Melo, F. Benevenuto, B. Chandrasekaran, A. Feldmann, S. Zannettou, *[To appear]* *In Proceedings of the ACM Internet Measurement Conference*

*(IMC)*, August 2020.

§ "On Blockchain Commit Times: An analysis of how miners choose Bitcoin transactions," J. Messias, M. Alzayat, B. Chandrasekaran, K. P. Gummadi, *[To appear] In Proceedings of the Second International Workshop on Smart Data for Blockchain and Distributed Ledger (SDBD)*, August 2020.

§ "A Deeper Look at Web Content Availability and Consistency over HTTP/S," M. T. Paracha, B. Chandrasekaran, D. Choffnes, D. Levin, *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."***

§ "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. [Poster]

§ "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.

§ "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. [Poster]

§ "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

§ "An End-to-End View of DNSSEC Ecosystem Management," 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.

§ "A Universal Approach to Data Center Design," A. Akella, T. Benson, B. Chandrasekaran, C. Huang, B. Maggs and D. Maltz, *In Proceedings of the 16th International Conference on Distributed Computing and Networking (ICDCN)*, January 2015. [Invited paper]

## In the news

∗ 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).

∗ 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

## 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 & Keon Jang*
Universität des Saarlandes, Saarbrücken, DE
Graduate-level course, Summer Semester 2020

**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