

Rachee Singh

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EDUCATION	University of Massachusetts, Amherst Doctor of Philosophy, Computer Science (<i>on leave</i>) <i>Advisor:</i> Prof. Phillipa Gill <i>Thesis Committee:</i> Prof. Deepak Ganesan, Prof. Brian Levine, Dr. Victor Bahl <i>Awarded Google PhD Fellowship in Systems and Networking (2018)</i>	2016 –
	University of Massachusetts, Amherst Master of Science, Computer Science.	2016 – 2019
	Stony Brook University Doctor of Philosophy, Computer Science.	2015 – 2016 (<i>Transferred</i>)
	Birla Institute of Technology and Science - Pilani, India Bachelor of Engineering (Honors), Computer Science. <i>Co-op host organization:</i> Arista Networks, Bangalore, India.	2008 – 2012
RESEARCH	Microsoft Research , Redmond, Researcher	June 2019 – Present
EXPERIENCE	Microsoft Research , Redmond, Intern <i>Advisor:</i> Sharad Agarwal and Victor Bahl Peering-aware WAN traffic engineering.	May 2018 – August 2018
	Microsoft Research , Redmond, Intern <i>Advisor:</i> Monia Ghobadi Improving the throughput and availability of WAN optical links.	June 2017 – August 2017
	International Computer Science Institute , Berkeley, Intern <i>Advisor:</i> Sadia Afroz and Prof. Vern Paxson. Characterizing abusive traffic from anonymous communication networks and analyzing the rate at which IPs harness a bad reputation.	May 2016 – August 2016
AWARDS AND FELLOWSHIPS	<i>Google PhD Fellowship (Systems and Networking)</i>	March 2018
	<i>ACM Student Research Competition SIGCOMM – Silver medal</i>	August 2016
INDUSTRY EXPERIENCE	Arista Networks , Bangalore. Software Engineer. Building features for Open Shortest Path First protocol for IPv6 including Link State Update throttle timers for preventing network churn, support for totally stubby NSSA areas, Virtual Routing and Forwarding (VRF) support for OSPFv3.	July 2012 – July 2015
	CERN , Switzerland. Google Summer of Code Intern. Built a geographically aware Domain Name System for CERN VMFS clients to allow low latency access to servers by responding with the address of the server geographically closest to the querying client.	June – Sep 2012
	Arista Networks , Bangalore. Software Engineer Intern. Reduces the memory footprint of the Address Resolution Protocol (ARP) by re-implementing it in C++. (Was offered a full time position in the company after the completion of the internship).	July – Dec 2011
PUBLICATIONS AND PRE-PRINTS	Peering-aware Traffic Engineering in Software Defined WANs (In submission) PredictRoute: A Network Path Prediction Toolkit (In submission) Characterizing the deployment and performance of multi-CDNs Rachee Singh , Arun Dunna, and Phillipa Gill.	

In: ACM **IMC** 2018, Boston, MA.

RADWAN: Rate Adaptive Wide Area Network

Rachee Singh, Monia Ghobadi, Klaus-Tycho Foerster, Phillipa Gill, and Mark Filer. In: ACM **SIGCOMM** 2018, Budapest, Hungary.

Run, Walk, Crawl: Towards Dynamic Link Capacities

Rachee Singh, Monia Ghobadi, Klaus-Tycho Foerster, Phillipa Gill, and Mark Filer. In: ACM **HotNets** 2017, Palo Alto, CA.

Characterizing the Nature and Dynamics of Tor Exit Blocking

Rachee Singh, Rishab Nithyanand, Sadia Afroz, Paul Pearce, Michael Carl Tschantz, Phillipa Gill, and Vern Paxson. In: 26th USENIX Security Symposium (**USENIX Security** 17). Vancouver, BC.

PathCache: A Path Prediction Toolkit

Rachee Singh and Phillipa Gill. In: Proceedings of the 2016 ACM SIGCOMM Conference. **SIGCOMM** 16. Florianopolis, Brazil. (Poster)

[Awarded the silver medal in the SIGCOMM ACM Student Research Contest].

The Politics of Routing: Investigating the Relationship Between AS Connectivity and Internet Freedom

Rachee Singh, Hyungjoon Koo, Najmehalsadat Miramirkhani, Fahimeh Mirhaj, Phillipa Gill, and Le-man Akoglu. In: 6th USENIX Workshop on Free and Open Communications on the Internet (**FOCI** 2016). Austin, TX.

Holding all the ASes: Identifying and Circumventing the Pitfalls of AS-aware Tor Client Design

Rishab Nithyanand, **Rachee Singh**, Shinyoung Cho, and Phillipa Gill

(In submission at **Transactions of Privacy and Security**) Arxiv Preprint 2016.

TALKS AND PRESENTATIONS	SIGCOMM 2018 , Budapest, Hungary	August 2018
	RADWAN : a rate-adaptive wide-area network	
	IMC 2018 , Boston, MA	November 2018
	Characterizing the performance of multi-CDNs.	
	Applied Networking Research Workshop 2018 , Montreal, Canada	July 2018
	Characterizing the Nature and Dynamics of Tor Exit Blocking.	
	HotNets 2017 , Palo Alto, CA	November 2017
	Run, Walk, Crawl: Towards Dynamic Link Capacities	
	USENIX Security , Vancouver, BC	August 2017
	New England Security Day , Northeastern University	September 2017
	Characterizing the Nature and Dynamics of Tor Exit Blocking.	
	USENIX Security, FOCI Workshop , Austin, TX	August 2016
	Politics of Routing.	
	New England Security Day , Harvard University	April 2016
	Cipollino: A Measurement Driven AS-aware Tor Client	
	AIMS, 2016 , University of California, San Diego	Feb 2016
	Applications for Measurement Data: Improving Anonymity Online. [Slides]	
	PyCon India, 2012	Sep 2012
	Presented a tutorial on building a Linux cluster using Python and a distributed message queue.	

TEACHING **Introduction to Databases** **Aug 2015 – Dec 2015**

EXPERIENCE Grading student homework assignments, exams and projects. Holding office hours. Coursework included SQL based database queries and database design in Microsoft Access Design View.

Programming Languages and Compilers **Jan – July 2012**

 Involved with the organization of the course project (detection of regular polygons). Building a command line tool to evaluate the student submissions.

MIT Indian Mobile Initiative **July – Aug 2011**

 Student mentor for the MIT-backed initiative to teach Android development. Organized lab sessions and mentored students to gain proficiency in developing complex Android applications.

PROGRAMMING Python, C, Java.

LANGUAGES

COURSEWORK **Advanced Artificial Intelligence - UMass Amherst**
Research Methods in Empirical CS - UMass Amherst
Advanced Algorithms - UMass Amherst
Probability and Random Processes - UMass Amherst
Advanced Operating Systems - Stony Brook University
Advanced Computer Networks - Stony Brook University
Advanced Database Systems - Stony Brook University
Internet Censorship - Stony Brook University
Parallel Computing - BITS Pilani

OUTREACH **STEM Paths Innovation Network (SPIN), Seattle - Mentor**
Women in Engineering Computing Career Day at UMass Amherst - Mentor