

# Rachit Agarwal

Cornell University

T: 217-979-2266

Email: [ragarwal@cs.cornell.edu](mailto:ragarwal@cs.cornell.edu)

[www.cs.cornell.edu/~ragarwal](http://www.cs.cornell.edu/~ragarwal)

## Appointments

### Cornell University

Assistant Professor, Department of Computer Science

July 2016 – Present

### UC Berkeley

Postdoc, Department of Computer Science

January 2014 – June 2016

## Education

### University of Illinois at Urbana-Champaign, IL, USA

PhD, Electrical and Computer Engineering

*Low latency queries on big graph data*

Advisors: P. Brighten Godfrey, Matthew Caesar

### University College Cork, Cork, Ireland

M.Sc., Computer Science

*Randomness Preservation: Implications to Algorithmic Timing and Energy Complexity*

Advisor: Michel Schellekens

### University College Cork, Cork, Ireland

M.EngSc., Microelectronic Engineering

*Algebraic-Geometric Codes: Low Complexity Algorithms and VLSI Architectures*

Advisor: Emanuel Popovici

### Indian Institute of Technology (IIT) Kanpur, India

Bachelor of Technology, Electrical Engineering

## Awards & Recognitions

- 2021 Sloan Research Fellowship
- Google Research Scholar award  
*for "Datacenter transport design for Terabit Ethernet"*
- NSF CAREER award  
*for "Communication Synchrony"*
- 2020 Usenix Security Distinguished Paper Award  
*for "Pancake: Frequency Smoothing for Encrypted Data Stores"*
- 2018 SIGCOMM Best Student Paper Award  
*for "Sincronia: Near-Optimal Network Design for Coflows"*
- 2017 Google Faculty Research Award  
*for research on "Building Interactive Query Systems for Disaggregated Datacenters"*
- 2012 Rambus Research Fellowship, UIUC  
*for outstanding performance in Computer Science and Engineering research*

- 2010 Yi-Min Wang and Pi-Yu Chung Research Award, UIUC  
*for excellence in research in Computer Engineering*
- 2010 List of Teachers Ranked as Excellent by Their Students, UIUC  
*for excellence in teaching; Jeff Erickson's (undergraduate) algorithms course: CS473*
- 2007 IEEE ECCTD Paper selected among Top 5% Papers in the Conference  
*for "Low Cost Error Recovery in Delay-Tolerant Wireless Sensor Networks"*
- 2007 Gold Medal (Team), Irish Mathematics Intervarsity (National Senior Mathematics Olympiad)
- 2006 Selected Among Top 15 Indian Student Researchers by Intel Technologies
- 2001 All India Rank 142 in IIT-JEE Entrance Examination

## Teaching

- CS4450 Introduction to Computer Networks  
[Spring'21, 269 students] [Spring'20, 166 students] [Spring'19, 98 students] [Spring'18, 55 students]
- CS6450 Advanced Computer Networks  
[Fall'19, 10 students] [Fall'18, 5 students] [Fall'17, 7 students]
- CS6453 Big Data Systems: Trends and Challenges  
[Spring'17, 7 students]
- CS4410 Operating Systems  
[Fall'16, 306 students]
- CS4411 Operating Systems Practicum  
[Fall'16, 77 students]

## Recent Publications

- 2021 [Understanding Host Network Stack Overheads](#)  
Q. Cai, S. Chaudhary, M. Vuppalapati, J. Hwang, R. Agarwal  
SIGCOMM  
[Rearchitecting Linux Storage Stack for  \$\mu\$ s Latency and Terabit Ethernet](#)  
J. Hwang, M. Vuppalapati, S. Peter, R. Agarwal  
OSDI  
[Inter-datacenter Bulk Transfers with CodedBulk](#)  
S. Tseng, S. Agarwal, R. Agarwal, H. Ballani, A. Tang  
NSDI
- 2020 [Pancake: Frequency Smoothing for Encrypted Data Stores](#)  
P. Grubbs, A. Khandelwal, M. Lacharité, L. Brown, L. Li, R. Agarwal, T. Ristenpart  
Usenix Security (**Distinguished Paper Award**)  
[TCP  \$\approx\$  RDMA: CPU-efficient Remote Storage Access with i10](#)  
J. Hwang, Q. Cai, A. Tang, R. Agarwal  
NSDI  
[Building An Elastic SQL Engine on Disaggregated Storage](#)  
M. Vuppalapati, J. Miron, R. Agarwal, D. Truong, A. Motivala, T. Cruanes  
NSDI

- 2019 [Shoal: A Network Architecture for Disaggregated Racks](#)  
V. Shrivastav, A. Valadarsky, H. Ballani, P. Costa, K. S. Lee, H. Wang, R. Agarwal, H. Weatherspoon  
NSDI
- [Confluo: Distributed Monitoring and Diagnosis Stack for High-speed Networks](#)  
A. Khandelwal, R. Agarwal, I. Stoica  
NSDI
- 2018 [Sincronia: Near-Optimal Network Design for Coflows](#)  
S. Agarwal, S. Rajakrishnan, A. Narayan, R. Agarwal, D. Shmoys, A. Vahdat  
SIGCOMM (**Best Student Paper Award**)
- [Obladi: Oblivious Serializable Transactions in the Cloud](#)  
N. Crooks, M. Burke, S. Harel, E. Ceccetti, R. Agarwal, L. Alvisi  
OSDI
- [Distributed Network Monitoring and Debugging with SwitchPointer](#)  
P. Tammana, R. Agarwal, M. Lee  
NSDI
- 2017 [ZipG: Memory-Efficient Graph Store for Interactive Queries](#)  
A. Khandelwal, R. Agarwal, I. Stoica  
SIGMOD
- [MiniCrypt: Reconciling Compression and Encryption for Big Data Stores](#)  
W. Zheng, F. Li, R. Popa, I. Stoica R. Agarwal  
Eurosys
- 2016 [Network Requirements for Resource Disaggregation](#)  
P. Gao, A. Narayan, S. Karandikar, J. Carreira, R. Agarwal, S. Ratnasamy, S. Shenker  
OSDI
- [Simplifying Datacenter Network Debugging with PathDump](#)  
P. Tammana, R. Agarwal, M. Lee  
OSDI
- [BlowFish: Dynamic Storage-Performance Tradeoff in Data Stores](#)  
A. Khandelwal, R. Agarwal, I. Stoica  
NSDI
- [Universal Packet Scheduling](#)  
R. Mittal, R. Agarwal, S. Ratnasamy, S. Shenker  
NSDI
- 2015 [Succinct: Enabling Queries on Compressed Data](#)  
R. Agarwal, A. Khandelwal, I. Stoica  
NSDI
- [pHost: Distributed Near-optimal Datacenter Transport Over Commodity Network Fabric](#)  
P. Gao, A. Narayan, G. Kumar, R. Agarwal, S. Ratnasamy, S. Shenker  
CoNext
- [CherryPick: Tracing Packet Trajectory in Software-Defined Datacenter Networks](#)  
P. Tammana, R. Agarwal, M. Lee  
SOSR
- [FastLane: Making Short Flows Shorter with Agile Drop Notification](#)  
D. Zats, A. Iyer, G. Ananthanarayanan, R. Agarwal, R. Katz, I. Stoica, A. Vahdat  
SoCC

### [Universal Packet Scheduling](#)

R. Mittal, R. Agarwal, S. Ratnasamy, S. Shenker  
HotNets

### [On the Scalability of Routing With Policies](#)

A. Gulyas, G. Retvari, Z. Heszberger, R. Agarwal  
ToN

2014 [The Space-Stretch-Time Tradeoff in Distance Oracles](#)

R. Agarwal  
ESA

2013 [Distance Oracles for Stretch Less Than 2](#)

R. Agarwal, P. B. Godfrey  
SODA

### [Brief Announcement: A Simple Stetch-2 Distance Oracle](#)

R. Agarwal, P. B. Godfrey  
PODC

2011 [Debugging the Data Plane with Anteater](#)

H. Mai, A. Khurshid, R. Agarwal, M. Caesar, P. B. Godfrey, S. T. King  
SIGCOMM

### [Approximate Distance Queries and Compact Routing in Sparse Graphs](#)

R. Agarwal, P. B. Godfrey, S. Har-Peled  
INFOCOM

### [Slick Packets](#)

G. Nguyen, R. Agarwal, J. Liu, M. Caesar, P. B. Godfrey, S. Shenker  
SIGMETRICS

## **Current Students**

Postdoc      Mina Tahmasbi Arashloo (Cornell Presidential Fellow, PhD: Princeton)

Jaehyun Hwang (joint with Ao Tang, PhD: Korea University)

PhD            Saksham Agarwal

Qizhe Cai

Midhul Vuppalapati

Abhishek Vijaya Kumar

MS            Katherine Gioioso

## **Alumni**

Ali Munir [Postdoc, 2019-20] → *Researcher, Huawei Canada Research Center*

Anurag Khandelwal [Postdoc, 2019] → *Assistant Professor, Yale University*

Lloyd Brown [BS, 2019] → *Now PhD student at UC Berkeley*

Alana Marzoev [BS, 2018] → *Now PhD student at MIT*

Yannan Wu [BS, 2017] → *Now PhD student at MIT*

## Conference Program Committee

NSDI	[2021] [2020] [2018]
SIGCOMM	[2020]
SIGMETRICS	[2020] [2019] [2018]
OSDI	[2020] [2018]
ATC	[2020] [2018] [2017]
APoCS	[2020]
SOSR	[2017]
CoNext	[2016]
HotCloud	[2016]
ICDCS	[2016]
HotOS	[2017 (Co-chair)]

## Community Service

USENIX ;login:	[Co-editor (Systems and Networking area, with Arvind Krishnamurthy), 2021-22]
CCC Workshop	[Co-organizer, 2019]
SIGMETRICS	[Conference Development Committee, 2019-2020]
NSF Panel	[2021 $\times$ 3] [2020 $\times$ 2] [2019] [2018] [2017] [2016]
NSDI	[Poster Chair, 2018]
HotOS	[General Co-chair, 2017]

## Department Service

PhD Admissions Committee	[2020, 2019, 2018, 2017]
Colloquium committee	[Fall 2021]
Systems lunch organizer	[Fall 2021]
Lunch & Learn organizer	[Fall 2020]
Seminars	[Fellowship applications, 2020] [PhD application review, 2019]