QIZHE CAI

Bill and Melinda Gates Hall ⋄ Ithaca, NY, 14850
qc228@cornell.edu

RESEARCH INTEREST

Operating systems and computer networking, with a focus on designing and building efficient and scalable network systems in datacenters.

EDUCATION

Cornell University, Ithaca *Aug 2018 - May 2024 (Expected)*
Ph.D. in Computer Science
Overall GPA: 4.0/4.0
Thesis: Design Efficient Network Stacks/Protocols for Terabit Ethernet
Advisor: Rachit Agarwal

Princeton University, Princeton *2016 - June 2018*
M.S.E (thesis-track) in Computer Science
Overall GPA: 3.95/4.0
Thesis: Network-Wide Heavy Hitter Detection For Real-Time Telemetry
Advisor: Jennifer Rexford

University of Michigan, Ann Arbor *2012 - 2016*
B.S.E in Computer Science, Summa Cum Laude
Overall GPA: 3.956/4.0

PUBLICATION

Saksham Agarwal, **Qizhe Cai**, Rachit Agarwal, David Shmoys, Amin Vahdat, "Harmony: A Congestion-free Datacenter Architecture", In USENIX NSDI, 2024.

Qizhe Cai, Midhul Vuppalapati, Jaehyun Hwang, Christos Kozyrakis, Rachit Agarwal, "Towards μs Tail Latency and Terabit Ethernet: Disaggregating the Host Network Stack", In ACM SIGCOMM, 2022

Qizhe Cai, Mina Tahmasbi Arashloo, Rachit Agarwal, "dcPIM: Near-Optimal Proactive Datacenter Transport", In ACM SIGCOMM, 2022

Qizhe Cai, Shubham Chaudhary, Midhul Vuppalapati, Jaehyun Hwang, Rachit Agarwal, "Understanding Host Network Stack Overheads", In ACM SIGCOMM, 2021

Jaehyun Hwang, **Qizhe Cai**, Rachit Agarwal, Ao Tang, "I10: A Remote Storage I/O Stack for High-Performance Network and Storage Hardware", In USENIX NSDI, 2020.

Rob Harrison, **Qizhe Cai**, Arpit Gupta, Jennifer Rexford,"Network-Wide Heavy Hitter Detection with Commodity Switches", In ACM SOSR, 2018

WORK EXPERIENCE

Cornell University Jan 2019 - Now
Research Assistant *Ithaca, NY*

· Delved into understanding the critical challenges that limit the efficient utilization of Terabit hardware in existing networks. Re-architected network stacks to overcome some of these challenges, and developed working prototypes to demonstrate the effectiveness of designs.

Google Inc. Jan 2022 - Aug 2022
Student Researcher *Mountain View, CA*

· Developed a system model to analyze and understand the performance of Terabit systems.

Cornell University Sep 2018 - Jan 2019
Teaching Assistant *Ithaca, NY*

· CS4321 Practicum in Database Systems - Fall 2018

Princeton University Feb 2017 - May 2018
Research Assistant *Princeton, NJ*

· Identified the network-wide heavy-hitter detection problem and found out solutions to reduce memory usage in switches and communication costs between switches and controllers. Run the simulation to prove our solutions. Built P4 prototypes on the Tofino switches.

Princeton University Sep 2016 - August 2018
Teaching Assistant *Princeton, NJ*

· COS318 Introduction to Operating System - Fall 2017
· COS333 Advanced Programming Techniques - Spring 2017
· COS318 Introduction to Operating System - Fall 2016

Google Inc. June 2017 - August 2017
Software Engineer Intern *Mountain View, CA*

· Enabled voice control of third-party Bluetooth Low Energy (BLE) devices via Google Home. Developed a BLE Device Custom Profile, allowing manufacturers to create custom command manuals without coding. Demonstrated the project's workflow with a sample BLE robot demo.

Google Inc. June 2016 - August 2016
Software Engineer Intern *Mountain View, CA*

· Developed a back-end server enabling IoT device authentication. Created an Android mobile demo to showcase the authentication process.

AWARDS

Meta fellowship, 2022

James B. Angell Scholar, 2014, 2015, 2016 - University of Michigan

Dean's List, 2013, 2014, 2015 - University of Michigan

University Honors 2012, 2013, 2014, 2015 - University of Michigan

PROFESSIONAL ACTIVITIES

External Reviewer

· IEEE Transactions on Network and Service Management, Transactions on Mobile Computing, Computer Networks, Transactions on Consumer Electronics, Network Magazine.