

# HARSH KAPADIA

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## EDUCATION

### Boston University – The Graduate School of Arts & Sciences (GRS)

Dec 2023

*Master of Science in Computer Science (CGPA: 3.85 / 4.0)*

*Boston, USA*

- Courses: Computer Networks, Transport Protocol 'Homa', Network Security, Operating Systems, Databases
- Teaching Assistant: Computer Networks

### University of Mumbai – Thadomal Shahani Engineering College

May 2022

*Bachelor of Engineering in Information Technology (CGPA: 9.02 / 10.0)*

*Mumbai, India*

- Courses: Computer Networks, Network Security, Web Dev., Database Management, Project Management

## SKILLS

**Tools:** iperf3, Wireshark, Tcpdump, Git

**Languages:** Python (Scapy), C, Bash, Java, JavaScript

**Testbeds:** GENI, CloudLab

**Databases:** MySQL, MongoDB

**Web:** React.js, Express.js, HTML, CSS, JS

**Platforms:** GitHub, Firebase

## EXPERIENCE

### Advanced Micro Devices (AMD), Inc.

May 2023 – Aug 2023

*Software Engineer Intern*

*Austin, USA*

- Built a web app to provision and manage Virtual Machines configured with debug software and scripts, user public keys, persistent storage and VNC to reduce server issue debug time by 10%, using KVM, Bash scripts, Express.js and React.js.
- Benchmarked network bandwidth (iperf3), memory bandwidth (STREAM) and CPU performance (DGEMM) of servers.

### NanoNet Technologies Inc.

Aug 2021 – Nov 2021

*Software Intern*

*Remote*

- Published two [OCR](#) and [Image Classification](#) SDKs to improve development time by 50%.
- Enhanced documentation by enforcing the OpenAPI 3.1.0 standard and adding more code samples.

## PROJECTS

### Performance Comparison of TCP Versions | [iperf3](#), [GENI Testbed](#) | [Report](#), [GitHub](#)

Nov 2022 – Dec 2022

- Compared Congestion Window size responses of TCP Reno, TCP CUBIC, TCP Vegas and TCP BBR to network congestion.
- Compared the fairness of two TCP versions running simultaneously on the same connection.

### TCP Throughput Measurement | [iperf3](#)

Jun 2023 – Jul 2023

- Tuned systems to achieve 100 Gbps throughput across two servers and a Switch.
- Tuned Kernel level parameters.

### Reliable Transport Protocols | [Java](#)

Oct 2022 – Nov 2022

- Implemented Stop-and-Wait, Selective-Repeat and Go-Back-N type reliable transport protocols.
- Cumulative and Selective Acknowledgements were used in a lossy environment.

### TCP Performance Measurement | [Java](#)

Oct 2022

- Used Socket Programming to measure the RTT and Throughput of a TCP connection.
- Implemented a protocol message format to conduct measurements for various payload sizes.

### ARP Spoofing and DNS Cache Poisoning | [Python \(Scapy\)](#)

Feb 2023 – Mar 2023

- Carried out ARP Spoofing and DNS Cache Poisoning inside a controlled Docker environment.

### Git Graph | [React.js](#) | [Web app](#), [GitHub](#)

Jan 2022 – Jul 2022

- A web app to visualize the graphs that Git creates to connect Commit, Tree and Blob objects internally.
- Takes an existing repository to generate graph visualizations for local branches and allows highlighting specific commits.
- Taught 100+ people [the internals of Git](#) using Git Graph in my talks.

## EXTRACURRICULAR ACTIVITY

### Articles | [networking.harshkapadia.me](https://networking.harshkapadia.me)

Dec 2020 – present

- Wrote in-depth articles on [Homa](#), [TLS](#), [SSH](#), [IP and MAC Routing](#), [TCP](#), etc.
- Analysed packet captures to understand protocol design decisions.

### Talks | [talks.harshkapadia.me](https://talks.harshkapadia.me)

Jun 2020 – present

- Impacted 700+ people in 20+ talks and workshops at various technical meetups.
- Gave talks on ['Routing Using IP and MAC Addresses'](#), [Git internals](#), etc.
- Conducted in-person talks on [The Internals of Git](#) at TechTogether Boston 2022 and BostonHacks 2022.

### Our Tech Community (OTC) | [ourtech.community](https://ourtech.community)

Jan 2020 – present

*Organiser*

- Started a Tech-loving open-to-all community with 500+ current members.
- Hosted 800+ hours of weekly [OTC CatchUp](#) sessions involving technical discussions, project showcases and talks.