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**
Field Applications Engineering 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   **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   **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   **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.