

# Taveesh Sharma

GitHub: staveesh

Email: taveesh@uchicago.edu

## EDUCATION

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- **University of Chicago** Chicago, IL, USA  
*PhD - Computer Science* September 2022 - Present  
*Courses:* Mathematical Reasoning Using Discrete Mathematics, Graduate Computer Security, Machine Learning for Computer Systems, Networks and Distributed Systems, Data Visualization, Computational Linguistics
- **University of Cape Town** Cape Town, South Africa  
*Master of Science - Computer Science; 74%* July 2020 - June 2022  
*Thesis title:* Investigating Optimal Internet Data Collection in Low Resource Networks
- **Birla Institute of Technology and Science, Pilani** Goa, India  
*Bachelor of Engineering - Computer Science; GPA: 7.50/10* August 2014 - August 2018  
*Courses:* Operating Systems, Data Structures and Algorithms, Design and Analysis of Algorithms, Artificial Intelligence, Machine Learning, Computer Networks, Database Management Systems

## SKILLS SUMMARY

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- **Languages:** Python, Java, C, C++, JavaScript, SQL, Bash
- **Frameworks/Libraries:** Scikit, Pandas, NumPy, ReactJS, Spring Boot, Hibernate, Dropwizard
- **Tools:** Docker, Git, PostgreSQL, MySQL, MongoDB, InfluxDB, SQLite
- **Platforms:** Linux, Windows, Arduino, Raspberry Pi, AWS, GCP, Android

## EXPERIENCE

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- **University of Chicago** Chicago, IL, USA  
*Teaching Assistant* September 2023 - Present
  - **Machine Learning for Computer Systems:** Currently assisting Prof. Nick Feamster in setting up exam problems and evaluations for this course.
- **University of Chicago** Chicago, IL, USA  
*Research Assistant* September 2022 - Present
  - **Network Operations and Internet Security Lab:** Working on a wide range of problems that interface with Internet measurements. I mainly explore novel representations of network traffic for extracting meaningful patterns.
  - **Internet Equity Initiative:** As part of this initiative by UChicago's Data Science Institute, I'm looking at spatio-temporal patterns in internet performance data.
- **University of Cape Town** Cape Town, South Africa  
*Research Assistant* July 2020 - July 2022
  - **African Route Collectors Data Analyzer (ARDA):** Worked on building the African Route Collectors Data Analyzer (ARDA) system. This system offers unique views of the current status of interconnection and traffic exchange in the African region and its evolution from 2005. This project aims to make African internet infrastructure more resilient and was jointly funded by the Internet Society (ISOC) and the African Internet Registry (AFRINIC).
  - **QoSMon:** QoSMon is a network quality of service measurement system originally developed for the Ocean View community, Cape Town. The system is designed to minimize contention between network resources for active measurements. This project found its applicability in a wide range of research problems. One notable use of this system was towards measuring the extent of Internet transparency in the Democratic Republic of Congo (DRC).
  - **PowerQoPE:** Developed an application that aims to balance the quality of protection (QoP) with the quality of experience (QoE) for any internet application on the Android platform.
- **ePayLater** Gurgaon, India  
*Software Engineer (Full-time)* February 2020 - July 2020
  - **Kiranamitra:** Wrote the backend for an ordering platform that supported small business owners (*Kiranas*) during the COVID-19 pandemic in India. The majority of these business owners were neighborhood grocery shops. The platform helped them generate revenue by connecting them to the nearest customers while respecting social distancing norms.
- **PayPal** Chennai, India  
*Software Engineer (Full-time)* July 2018 - October 2019
  - **FAST-R:** Wrote the backend for a platform that helped analysts safely deploy their fraud detection models. The platform composed of a sandbox environment that implemented a SQL syntax checker and data validator. After testing their SQL code in the sandbox, the platform implemented an approval chain that facilitated production deployments in an automated manner. This platform resulted in a 275-day improvement in terms of annual developer productivity.
- **PayPal** Chennai, India  
*Intern (Full-time)* July 2017 - December 2017
  - **Seller's Portfolio:** Profiled sellers across different business segments of PayPal and developed an ARIMA time-series model for forecasting loss due to claims filed by buyers.

## PUBLICATIONS

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- **Taveesh Sharma**, Tarun Mangla, Arpit Gupta, Junchen Jiang, Nick Feamster (2023). Estimating WebRTC Video QoE Metrics Without Using Application Headers. In ACM SIGCOMM Internet Measurement Conference (IMC), pp. 485–400, Montreal, Canada. 16 pages. <https://doi.org/10.1145/3618257.3624828>.
- **Taveesh Sharma**, Jonatas Marques, Nick Feamster, Nicole Marwell (2023). A First Look at the Spatial and Temporal Variability of Internet Performance Data in Hyperlocal Geographies. In Research Conference on Communications, Information, and Internet Policy (TPRC), pp. 1–6, Washington, DC.
- **Taveesh Sharma** and Josiah Chavula. 2021. Investigating Measurement Scheduling Strategies in Low Resource Networks (Poster). In ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS) (COMPASS '21), June 28-July 2, 2021, Virtual Event, Australia. ACM, New York, NY, USA 4 Pages. <https://doi.org/10.1145/3460112.3472310>
- **Sharma, T** and Chavula, J. (2021) Topology-Aware Measurement Scheduling Strategies in Low Resource Networks. Proceedings of Southern African Telecommunications Networks and Applications Conference, 21-24 November 2021, Central Drakensberg, Kwazulu Natal, South Africa.
- Mbewe, Enock Samuel and **Sharma, Taveesh** and Chavula, Josiah (2022) PowerQoPE: A Personal Quality of Internet Protection and Experience Configurator, Proceedings of IFIP International Symposium on Human Aspects of Information Security & Assurance (HAISA 2022), 6-7 July 2022, Mytilene, (Greece), Springer.
- Dominique Oosthuizen, **Taveesh Sharma**, Josiah Chavula, Melissa Densmore (2022) Investigating the Usability and Quality of Experience of Mobile Video-Conferencing Apps Among Bandwidth-Constrained Users in South Africa (SAICSIT 2022), 18-20 July 2022, Cape Town, South Africa, Association for Computing Machinery.

## OPEN SOURCE SOFTWARE

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- **VCAML**: An ML pipeline designed to estimate transient quality for WebRTC-based video conferencing apps. ([link](#))
- **QoSMon**: An orchestration engine for periodic internet measurements. ([link](#))
- **QoSMon UI**: A reactjs application for visualizing internet measurement results. ([link](#))
- **MobiPerf**: A modified version of the original MobiPerf application that supports websockets. ([link](#))
- **MobiPerf Simulator**: A docker-based client for running internet measurements. ([link](#))
- **Measurement Server**: A speed test server that can be used as a mininet node. ([link](#))

## HONORS AND AWARDS

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- Received the Crerar Fellowship for being identified as one of the strongest applicants for UChicago's PhD program.
- Awarded full departmental scholarship at University of Cape Town for MSc research.
- Awarded for Creative Thinking and Collaboration at PayPal.
- 3rd place at PayPal RCGs Upload Hackathon.

## VOLUNTEER EXPERIENCE

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- **Reviewer** Virtual  
*Served on the shadow TPC for ACM Internet Measurement Conference.* May 2022 - July 2022
- **PayPal Gives Hackathon** Chennai, India  
*Developed an ordering app for an initiative for providing livelihood to rural women.* January 2019 - March 2019
- **Intern at Indian Red Cross Society** Delhi, India  
*Assisted in the development of a learning platform for Indian Red Cross staff and volunteers.* May 2016 - July 2016