

UDIT PAUL

Harrison, New York

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Education

University of California Santa Barbara

September 2023

Doctor of Philosophy (Ph.D.), Computer Science

University of Cape Town

June 2018

Master of Science (M.S.), Electrical Engineering

Research Interests

Seasoned computer scientist with expertise in communication networks, data science, and machine learning. Proven track record of delivering data-driven insights and solutions to complex challenges. Demonstrated success in both academia and industry, consistently applying advanced analytical skills to enhance practical applications and innovation.

Professional Experience

Research Scientist

July 2024 – June current

Cisco ThousandEyes

New York City, NY

- Researching on methodologies to better identify network anomalies using cross-layered network measurements.

Data Analyst II

August 2023 – June 2024

Ookla

Seattle, Washington

- Created a methodology to benchmark over **100 M** end user's quality of experience while accessing web pages for over 150 countries.
- Developed a novel methodology to perform anomaly detection in both large and sparse datasets, yielding over **90%** accuracy; thereby, significantly enhancing the system's ability to identify and respond to irregular data patterns.
- Engineered and deployed a robust data engineering pipeline using **Airflow**, specifically tailored to implement the newly developed anomaly detection methodology in a production environment.

Graduate Research Assistant

September 2018 – September 2023

University of California Santa Barbara

Santa Barbara, California

- Developed the Broadband-plan Querying Tool (BQT) using web scrapers to efficiently curate a dataset of over **1 million** residential broadband plans from 8 ISPs.
- Developed the Broadband Subscription Tier (BST) methodology, a two-stage hierarchical unsupervised classification technique that accurately identifies broadband subscription tiers from crowd-sourced network measurements with **99%** accuracy.
- Curated a dataset of 17,000 tweets from Twitter and developed a natural language processing framework to identify tweets related to power and communication outages for aiding first responders during natural disasters. Implemented 22 machine learning algorithms, achieving approximately **90%** accuracy in classification tasks.

PhD Research Intern

June 2022 – September 2022

IBM

Yorktown Heights, New York

- Contributed to an Agent-Based Model (ABM) that simulates the impact of lack of good quality internet connectivity on populations of different socioeconomic statuses.
- Conducted a longitudinal analysis on a dataset of **30M** to understand how the internet quality has changed for different population groups.

Awards

- ACM SIGCOMM Doctoral Dissertation Award, 2024.
- UCSB CS Department Outstanding Dissertation Award, 2023.
- UCSB CS Department Outstanding Publication Award, 2023.
- ACM SIGCOMM IMC Distinguished Paper Award, 2022.

Refereed Publications

- **Udit Paul**, Jiamo Liu, Vinothini Gunasekaran, Tejas N Narechania, Arpit Gupta, and Elizabeth Belding, “Decoding the Divide: Analyzing Disparities in Broadband Plans Offered by Major US ISPs”, Proceedings of the ACM SIGCOMM 2023 (**SIGCOMM’23**).
- **Udit Paul**, Jiamo Liu, Mengyang Gu, Arpit Gupta, and Elizabeth Belding, “The Importance of Contextualization of Crowdsourced Active Speed Test Measurements”, Proceedings of the ACM SIGCOMM Internet Measurement Conference 2022 (**IMC’22**). [*Best paper*].
- Tarun Mangla, **Udit Paul**, Arpit Gupta, Nicole Marwell, and Nick Feamster, “Internet Inequity in Chicago: Adoption, Affordability, and Availability”, Proceedings of the 50th Research Conference on Communications, Information and Internet Policy (**TPRC’22**).
- **Udit Paul**, Jiamo Liu, David Farias-Llerenas, Vivek Adarsh, Arpit Gupta, and Elizabeth Belding, “Characterizing Internet Access and Quality Inequities in California M-Lab Measurements”, Proceedings of the Conference on Computing and Sustainable Societies (**COMPASS’22**).
- Vivek Adarsh, Michael Nekrasov, **Udit Paul**, Tarun Mangla, Arpit Gupta, Morgan Vigil-Hayes, Ellen Zegura, and Elizabeth Belding, “Coverage is not binary: Quantifying mobile broadband quality in urban, rural, and tribal contexts”, Proceedings of the International Conference on Computer Communications and Networks (ICCCN) 2021 (**ICCN’21**).
- Vivek Adarsh, Michael Nekrasov, **Udit Paul**, Alex Ermakov, Arpit Gupta, Morgan Vigil-Hayes, Ellen Zegura, and Elizabeth Belding, “Too Late for Playback: Estimation of Video Stream Quality in Rural and Urban Contexts”, Proceedings of the Passive and Active Measurement Conference (**PAM’21**).
- Vivek Adarsh, Michael Nekrasov, **Udit Paul**, and Elizabeth Belding, “Estimation of congestion from cellular walled gardens using passive measurements”, IEEE Transactions on Mobile Computing, vol. 21, no. 10, 2021.
- **Udit Paul**, Alex Ermakov, Michael Nekrasov, Vivek Adarsh, and Elizabeth Belding, “#Outage: Detecting Power and Communication Outages from Social Networks”, Proceedings of the World Wide Web Conference (**WWW ’20**).
- Michael Nekrasov, Vivek Adarsh, **Udit Paul**, Esther Showalter, Ellen Zegura, Morgan Vigil-Hayes, and Elizabeth Belding, “Evaluating LTE coverage and quality from an unmanned aircraft system”, International Conference on Mobile Ad Hoc and Sensor Systems (**MASS’19**).

Invited Talks

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| • Improving understanding of crowdsourced measurements
<i>Google - Measurement Lab</i> | September 2022 |
| • Contextualizing crowdsourced measurements
<i>Ookla</i> | October 2022 |

Teaching

- Introduction to Computer Networks (CMPSC 176A) - Spring, 2019.
- Computer Networking (CMPSC 176B) - Winter, 2019.
- Introduction to Computer Networks (CMPSC 176A) - Fall, 2018.

Technical Skills

Languages	Python, Ruby, C/C++, JavaScript, MySQL, PostgreSQL, Bash.
Developer Tools	Google Cloud Platform, Amazon Web Services, Android Studio.
Technologies/Frameworks	Linux, GitHub, Hadoop, Spark, Airflow, Docker, Tensorflow, Pytorch.

Professional References

- Elizabeth Belding, Professor of Computer Science, UCSB.
- Arpit Gupta, Assistant Professor of Computer Science, UCSB.