Varshika Srinivasavaradhan

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EDUCATION

University of California, Santa Barbara — Santa Barbara, CA
Doctor of Philosophy in Computer Science, GPA: 4.0 — *Sep 2022 – Present*

Purdue University - Main Campus — West Lafayette, IN
Master of Science in Computer Science, GPA: 3.8 — *Aug 2018 – May 2020*

Anna University — Tamil Nadu, IN
Bachelor of Engineering in Electronics and Communication, GPA: 3.9 — *June 2014 – May 2018*

RESEARCH INTERESTS

My research focuses on Internet measurement, specifically Quality of Service and Quality of Experience of fixed broadband and cellular networks. I employ statistical and machine learning models to study and analyze network evolution, performance, and their variability under varying conditions, from experimental as well as crowd-sourced datasets. A key aspect of my work is the use of network insights to identify and address digital access disparities, shaping data-driven policy decisions. By combining technical expertise with a policy-oriented perspective, I aim to solve real-world problems related to network performance and equitable Internet access.

PUBLICATIONS

- **V. Srinivasavaradhan**, J. Liu and E. Belding., *"Broadband Access: Assessing the Interplay Between Wireline, Fixed Wireless, and Mobile Networks in the U.S."*, TPRC 2025.
- **V. Srinivasavaradhan**, J. Liu and E. Belding, *"5G Performance: A Multidimensional Variability Analysis"*, Passive and Active Measurement, PAM 2025.
- **V. Srinivasavaradhan**, O. Park and E. Belding., *"Mapping Cellular Network Evolution and Infrastructure Criticality: A Nationwide Analysis"*, TPRC 2024.
- H. Manda*, **V. Srinivasavaradhan***, L. Koduru, K. Zhang, X. Zhou, U. Paul, E. Belding, A. Gupta and T. Narechania, *"Assessing the Efficacy of the Connect America Fund in Addressing Internet Access Inequities in the US"*, ACM SIGCOMM 2024.
- A.Paul, **V. Srinivasavaradhan**, S.Selvi, and C. Pandu Rangan., *"A CCA-Secure Collusion Resistant Identity-Based Proxy Re-encryption Scheme"*, ProvSec'18

OTHER PUBLISHED WORK

- Measuring the Mobile Gap: From Network Performance to Infrastructure Criticality, *ACM MobiSys Rising Stars Forum 2025.*
- Measuring Broadband Policy Success, Harvard Law Review Blog, July 16, 2024.
- Beyond the Bars: Decoding the Complexities of Cellular Network Performance through Speedtest Data, *HotMobile 2024*
- Characterizing Cellular Speed Test Performance: An In-Depth Analysis of What Matters, *N2Women Workshop, ACM SIGCOMM 2023*

RESEARCH EXPERIENCE

Graduate Research Assistant — Sep 2022 – Present
University of California, Santa Barbara — *Santa Barbara, CA*

- Leading a research project to understand cellular networks and their spatial and temporal properties to study network quality across those dimensions.
- Curated 15,000 broadband news articles and policy documents from official sources and developed a broadband-focused Retrieval Augmented Generation (RAG)-based LLM designed to help broadband researchers track regulatory developments efficiently by delivering accurate and timely responses. Currently working on improving efficiency and fine-tuning for better accuracy and scalability.
- Analyzed 1.75 million crowdsourced Speedtest measurements from eight U.S. cities over three years, quantifying the impact of PHY layer features, device heterogeneity, and spectrum characteristics using statistical distance measures. Conducted controlled measurements to validate results from our in-the-wild analysis. *Accepted at PAM 2025*

- Examined 5G deployment and performance trends (2021–2023) using Speedtest and cellular infrastructure data. Assessed improvements by geography, urban-rural differences, and the correlation between infrastructure density and performance. *Accepted at TPRC 2024*
- Curated a dataset of 500K addresses with broadband availability and pricing information to analyze the influence of the Connect America Fund program on broadband deployment, pricing, and internet service provider compliance, and also evaluated competitive dynamics and regulatory adherence. *Accepted at SIGCOMM 2024*

Student Research Intern Oct 2024 – Mar 2025

Google LLC *Cambridge, MA*

- Researching and implementing algorithms to analyze large-scale, real-time latency measurements on Google internal networks to define service level objectives (SLOs) that accurately capture customer experience.

Internet Quality Barometer Fellow Jun 2024 – Sep 2024

Measurement Lab *Remote, CA*

- Contributed to the development of an application-specific metric for Internet quality that moves beyond raw speed by translating Quality of Service (QoS) into Quality of Experience (QoE) scores. Designed algorithms to aggregate and assign importance scores to QoS metrics based on their statistical importance for different applications, creating a nuanced framework that better represents user experience across network conditions. Currently refining the model for broader applicability and policy relevance.

Researcher, The CellWatch Project Sep 2022 – Present

Georgia Institute of Technology, University of California, Santa Barbara *Remote, CA*

- Collaborating on an open-source cellular network measurement suite designed for FCC-compliant speed test measurements to be used in challenge claims. The project includes a public data portal for aggregated anonymous data, a community coordination tool for organizing measurement campaigns, and a prediction engine that synthesizes multiple datasets to estimate coverage quality in a given area.

C-STARS Research Intern May 2019 – July 2019

Oak Ridge National Laboratory *Oak Ridge, TN*

- Researched, implemented, and tested unsupervised machine learning algorithms to automatically classify cloud types using climate data from sky cameras and ceilometers.

Indian Academy of Sciences Summer Research Fellow May 2017 – April 2018

Indian Institute of Technology Madras *Chennai, India*

- Developed a collusion-resistant Identity-Based Proxy Re-Encryption (IB-PRE) scheme satisfying adaptive Chosen Ciphertext Security (CCA) under the decisional bilinear Diffie-Hellman assumption. Designed to prevent unauthorized access to the delegator's secret key by a colluding proxy and delegatee. *Accepted at ProvSec 2018*

WORK EXPERIENCE

Software Development Engineer July 2020 – Jun 2022

Amazon Inc. *Bellevue, WA*

- Worked on the Amazon Enterprise Access(AEA) mobile application for Amazon employees that offers secure access to Amazon's internal services without the use of VPN.
- Designed and implemented the key feature to enforce AEA for Amazon internal email access on mobile devices.
- Developed features for the frontend user interface for Prime Incentive creations and worked on workflows for Prime Referrals, Prime Gift cards, Prime Incentives for Amazon Prime customers.

TEACHING EXPERIENCE

Graduate Teaching Assistant, University of California, Santa Barbara Sep 2022 – May 2023
- Courses: Introduction to Computer Science and Introduction to Computer Networks.

Graduate Teaching Assistant, Purdue University-Main Campus July 2020 – Jun 2022
- Courses: Information Systems and Computing for Science and Engineering.

TECHNICAL SKILLS

Languages:Python, C/C++, Java, SQL (Postgres), JavaScript, HTML/CSS, R, Go, Koltin, Scala
Frameworks:React, Node.js, Flask, JUnit, Apache Spark, TensorFlow, PySpark
Developer Tools: Git, Docker, Google Cloud Platform, AWS, Azure VS Code

ACADEMIC ACHIEVEMENTS

- Selected to present my work at the MobiSys Rising Stars Forum (2025).
- SIGCOMM'24 work received the Internet Research Task Force-Applied Networking Research Prize (2025).
- Internet Quality Barometer Fellowship from Measurement Lab (2024).
- Graduate Fellowship from University of California Santa Barbara (2022).
- CS Departmental scholarship from Purdue University (2018-2020)
- Gold Medal for Best Student award from Thiagarajar College of Engineering, Anna University 2018.
- Indian Academy of Sciences Summer Research Fellow 2017.