SYED TAUHIDUN NABI

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PhD candidate in Computer Science at Virginia Tech (expected May 2027), specializing in data science, Internet measurement, and network infrastructure analytics. Experienced in applying machine learning, statistical analysis, and large-scale data processing to characterize network performance, detect anomalies, and understand Internet infrastructure. Combines industry research experience at Cisco with eight years of experience in telemetry data science, network planning, and engineering at mobile operators. Published at IEEE Access, ACM IMC and SIGCOMM; 2026 ISOC Pulse Fellow.

Education

Virginia Tech — **GPA: 4.0/4.0** — **May 2027 (Exp.)**
PhD in Computer Science — *Blacksburg, Virginia*
Advisor: Dr. Shaddi Hasan

Virginia Tech — **GPA: 4.0/4.0** — **Dec. 2025**
M.S. in Computer Science & Application — *Highest Distinction* — *Blacksburg, Virginia*

BRAC University — **GPA: 4.0/4.0** — **Sep. 2021**
M.Sc. in Computer Science Engineering — *Highest Distinction* — *Dhaka, Bangladesh*
Thesis: Empowering Mobile Network Planning through Deep Learning: A Path to Democratization

American International University - Bangladesh — **GPA: 3.63/4.0** — **Feb. 2014**
Bachelor in Electrical & Electronic Engineering — *Among top 7%* — *Dhaka, Bangladesh*

Work Experience

Cisco ThousandEyes — **May 2026 – Aug 2026**
PhD Intern – Data Science & Research (Internet Measurement) — *Remote / San Francisco, CA*
Reported to: Dr. Arash Molavi & Dr. Álvaro Feal | Published: **Cisco ThousandEyes Engineering Blog**

- Extended a global Internet measurement and event detection pipeline to incorporate cellular networks, developing a network identification methodology using carrier ASNs, geospatial clustering, and radio access technology. Validated the approach on 51K+ measurements, achieving 82% correct attribution.
- Analyzed endpoint telemetry and identified the impact of session IP churn on network infrastructure attribution, quantifying differences between cellular and Wi-Fi gateway observations.
- Traced a ∼55% cellular telemetry gap to an untracked Android permission; the fix raised availability ∼15%.

Virginia Tech – Dept. of Computer Science — **Aug 2022 – Present**
Graduate Research Assistant (Mobile Networks & Internet Measurement) — *Blacksburg, Virginia*

- Lead four research projects (see *Research Projects*) spanning mobile core topology, IP geolocation, broadband auditing, and broadband equity, with published work at ACM IMC and SIGCOMM.
- Built reproducible data pipelines processing millions of records across measurement, routing, and regulatory data (RIPE Atlas, BGP, UNICEF Giga, M-Lab, Ookla, FCC BDC), supporting analyses spanning 175 countries and 911 U.S. ISPs.
- Co-mentor undergraduate research groups; one mentored team placed third at the 2024 VT Undergraduate Research in Computer Science competition.

Robi Axiata Ltd. — **May 2017 – Aug 2022**
Manager – Wireless Systems Engineering & Network Planning — *Dhaka, Bangladesh*

- Deployed carrier WiFi offloading integrated with the LTE packet core using Facebook's Magma Core, relieving congestion in high-demand regions.
- Optimized TCP/IP and RAN parameters through data-driven modeling, improving network throughput by 17%.
- Designed an internal IP-to-cell mapping framework that reduced drive-test costs by 91% and enabled automated network performance auditing.
- Built large-scale network analytics pipelines using LTE measurement reports and IP-level telemetry to geolocate cell sites and detect routing anomalies with sub-100m precision.

Banglalink (VEON) — **Aug 2014 – Apr 2017**
Specialist Engineer – Access Networks & Performance Analytics — *Dhaka, Bangladesh*

- Contributed to early validation of next-generation RAN and core designs, focusing on performance, coverage, and IP-level connectivity.
- Monitored and optimized end-to-end cellular network KPIs using real-time traffic and IP telemetry to enhance nationwide infrastructure reliability.
- Implemented automated frequency planning and mobility optimization, improving spectral efficiency across regions.

Selected Research & Data Science Projects

Red is Sus: Auditing the FCC National Broadband Map | *Applied ML, Data Quality* **Jan'23 – Nov'24**

- Integrated regulatory and crowdsourced datasets into 750K+ labeled observations covering 911 ISPs.
- Developed an XGBoost classifier to identify low-quality broadband availability claims, achieving ROC-AUC > 0.98 on held-out states.

Lost in the Prefix: IP Geolocation Accuracy | *Statistical Benchmarking, Geospatial Analytics* **Jun'25 – Present**

- Benchmarked four IP geolocation providers against RIPE Atlas and UNICEF Giga ground truth across 175 countries.
- Identified 10× higher median geolocation errors in mobile networks than fixed networks (179–207 km vs. 3–16 km).
- Analyzed the relationship between IP prefix granularity and geolocation accuracy, finding that ∼70% of mobile prefixes span more than 100 km.

NetBreakouts: Mapping Mobile Core Egress Topology | *Topology Inference, Data Mining* **Apr'25 – Present**

- Designed a scalable methodology combining traceroute and BGP data to identify and geolocate mobile core gateways (P-GW/UPF).
- Decoded hierarchical IPv6 addressing patterns to infer regional and subregional network topology.
- Built data pipelines for large-scale traceroute processing, prefix clustering, and longitudinal infrastructure analysis.

Signal Sense: Mobile Broadband Performance Analytics | *QoE Modeling, Measurement Bias* **Jan'25 – Present**

- Developed iQoE, a normalized quality-of-experience index using crowdsourced Internet measurements (Ookla, M-Lab).
- Analyzed correlations between measurement density, network performance, and socioeconomic conditions to identify broadband disparities and sampling bias.

Publications

- [**ACM SIGCOMM 2026 Poster**] **Syed Tauhidun Nabi**, Rahul Roy, S. M. Taiabul Haque, Syed Ishtiaque Ahmed, Shaddi Hasan. "Measuring the Unmeasured: Mobile Broadband Inequality in the Global South." [Paper]
- [**ACM IMC 2025 PRIME Workshop**] **Syed Tauhidun Nabi**, Shaddi Hasan. "NetBreakouts: Mapping Mobile Network Egress Topology." [Paper]
- [**ACM IMC 2024**] **Syed Tauhidun Nabi**, Zhuowei Wen, Brooke Ritter, Shaddi Hasan. "Red is Sus: Automated Identification of Low Quality Service Availability Claims in the US National Broadband Map." [Paper]
- [**IEEE Access 2023**] **Syed Tauhidun Nabi** et al. "Deep Learning Based Fusion Model for Multivariate LTE Traffic Forecasting and Optimized Radio Parameter Estimation." [Paper]
- [**Under Submission**] **Syed Tauhidun Nabi**, Jocelyn Bliton, Tijay Chung, Shaddi Hasan. "Lost in the Prefix: Revisiting IP Geolocation Accuracy Across Networks and Geographies." [Preprint]

Honors/ Awards

- **Internet Society Pulse Fellow, 2026:** Awarded the ISOC Pulse Fellowship in Internet Resilience
- **NSF Travel Grant, ACM SIGCOMM 2026:** To present research at SIGCOMM 2026
- **Pratt Fellowship, 2026:** Departmental Excellence Award — awarded by the Department of Computer Science (VT)
- **Google Cloud Research Credits, 2026:** Awarded ∼$1,000 in GCP compute credits to support PhD research
- **Best Research Publication Award:** Recognized for outstanding research publication at BRAC University
- **Best Performance Award:** Honored multiple times by Robi Axiata's Technology Division (2017–2022)

Leadership & Service

- **Shadow TPC Member,** ACM IMC 2026: reviewed papers and took part in shadow TPC deliberations.
- **Vice President,** CS Graduate Council, Virginia Tech (2024–2025): represented ∼800 CS graduate students.

Technical Skills

Programming & Data Analytics: Python, SQL, R, Go, Pandas, NumPy, PySpark, Jupyter
Data Science & Machine Learning: Statistical Analysis, Feature Engineering, Classification, Anomaly Detection, Time-Series Forecasting, XGBoost, PyTorch, TensorFlow
Data Engineering & Cloud: BigQuery, Google Cloud Platform, AWS (SageMaker, EMR), Docker, Linux, Git
Networking & Measurement: TCP/IP, BGP, DNS, IPv6, Traceroute, Network Performance & Telemetry Analytics
Geospatial Analytics: IP Geolocation, H3 Spatial Indexing, Spatial Data Analysis
Mobile Networks: LTE RAN, EPC/Packet Core (P-GW/UPF), Magma Core, Network Optimization