Srijeet Qazi

Applied Machine Learning Researcher | Spatial, Sensor, and Physical Data

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PROFILE

Applied ML researcher building state-estimation and prediction systems for **noisy, sparse physical data**. Develops reproducible Python/PyTorch pipelines across probabilistic modeling, graph learning, geospatial analytics, uncertainty, and deployable sensing. Two first-author papers.

EDUCATION

The University of Texas at Dallas *Richardson, TX*

Ph.D., Electrical Engineering, Aug 2024 – May 2028 (expected) Advisor: Prof. Mohammad Saquib

M.S., Electrical Engineering, Aug 2024 – Dec 2026 (expected)

B.S., Electrical Engineering, *Cum Laude*, Aug 2020 – May 2024

TECHNICAL SKILLS

ML & Modeling: Python, PyTorch, CUDA, GNNs, XGBoost, HMMs, transformers/VLMs, Bayesian inference/optimization, calibration, uncertainty quantification

Data & Systems: GeoPandas, OSMnx, OpenStreetMap, LiDAR, DEM, Sentinel-2, sensor fusion, C/C++, SQL/PostgreSQL, Linux, Docker, AWS, TACC HPC, DHIS2/ETL, Raspberry Pi, LoRaWAN

RESEARCH EXPERIENCE

Graduate Research Assistant, Wireless Communication Research Laboratory *Aug 2024 – Present*

The University of Texas at Dallas

I-NAV: State Estimation from Sparse Route Observations *Published and ongoing*

- Built an interpretable HMM–XGBoost pipeline fusing noisy language and visual observations with terrain and map cues. Person/location-disjoint evaluation over **3.3M candidate routes** yielded preliminary **37.8% exact-route recovery**, **34 m median endpoint error**, and **99% search-area reduction**. Failures centered on missing pedestrian-map coverage.
- Trained a demographics-only walking-speed network and GNN behavior model on **11K+ urban and rural routes** from HiKR, GeoLife, and Bwindi. Preliminary evaluation reached **89% turn accuracy** and reduced the destination search area by **83%**.
- Established a Bayesian vehicle baseline using direction-constrained Dijkstra search and seven-parameter optimization. For a typical trip, the true endpoint fell within the top **24% of posterior probability mass**, reducing the search area by **76%**. Across 94 trials, achieved **79.5% IoU** and **100% destination reachability**, outperforming routing, KDE, and particle-filter baselines.

COMPASS: NIH-Funded One Health Surveillance Pilot *Field data and ML infrastructure*

- Lead AI/ML and data infrastructure with UC Berkeley, UC Davis, Gorilla Doctors, and Bwindi Community Hospital. Develop spatiotemporal models integrating mobility, environmental, animal-health, and clinical data for disease surveillance.
- Deploy Linux/PostgreSQL/DHIS2 and ETL workflows for rural field collection, synchronization, validation, backup, and recovery under incomplete and intermittent connectivity.

Undergraduate Researcher, Department of Electrical and Computer Engineering *Jan 2023 – Jan 2024*

The University of Texas at Dallas

- Built a two-node TI CC1352P1 prototype encrypting temperature readings at the sensor and recovering them at **115,200 bps**. Designed a LoRaWAN/5G-SDN architecture for remote temperature, pressure, and leak monitoring during Winter Storm Uri-like emergencies.

SELECTED ENGINEERING PROJECTS

Edge AI Sensor Monitoring System *Jan 2026 – May 2026*

Deployed a quantized Qwen 2B model with RAG on Raspberry Pi 5. Integrated OpenCV face/gesture recognition, temperature and humidity alerts, and AWS event logs into a local multimodal monitoring assistant.

Toyota-Sponsored CAN-Bus Rogue ECU Detection *Aug 2023 – May 2024*

Built embedded security modules in C++ and Verilog on Arduino and FPGA hardware. Integrated and validated the CAN-bus intrusion-detection prototype in a six-person engineering team.

PUBLICATIONS

- **S. Qazi** et al., "I-NAV: Inverse Navigation for questionnaire-based geolocation in GPS-denied environments," *Array*, vol. 31, Art. 100978, 2026. *First author.*
- **S. Qazi** et al., "Security for Underground Utility Data Transmission in IoT Sensor Networks," *IWCMC*, pp. 1161–1165, 2024. *First author. Undergraduate Research Scholars semifinalist, top 20/200+.*

TEACHING EXPERIENCE

Teaching Assistant, UT Dallas ECE *Aug 2024 – May 2026*

Taught Advanced Engineering Mathematics to 50+ students and led weekly problem-solving sessions.