Anirudh Kamath

Ph.D. student in Computer Science

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Research statement

The central focus of my Ph.D. research is to study how to design *useful domain-specific data management platforms for wireless scientists and engineers.* Currently, I am building a data discovery system for users of the POWDER testbed at the University of Utah that allows wireless researchers to extract canonical tabular datasets relevant to their data needs from experimental data artifacts generated using open-source wireless networking software on the testbed.

Education

- **University of Utah** — Salt Lake City, UT
  Doctor of Philosophy in Computer Science — *Aug. 2025 – present*
  Ph.D. advisors: Dr. Jacobus Van der Merwe and Dr. Anna Fariha.
- **University of Utah** — Salt Lake City, UT
  Master of Science in Computer Science — *Aug. 2023 – Aug. 2025*
  Courses: Advanced Databases, Advanced Computer Networks, Wireless Networking Systems
- **Manipal Institute of Technology** — Manipal, India
  Bachelor of Technology in Computer and Communication Engineering — *Aug. 2016 – Aug. 2020*
  Courses: Machine Learning, iOS/Android Mobile App Development, Network Programming, IoT

Publications

- A. Kamath, D. Maas, J. V. d. Merwe, A. Fariha "WN-Wrangle: Wireless Network Data Wrangling Assistant," arXiv pre-print. https://arxiv.org/abs/2603.21310.
- M. S. Hossen, C. Dickerson, O. Ozdemir, A. Gurses, M. R. Sarbudeen, T. Zajkowski, A. M. Alam, E. Tucker, W. Bjorndahl, F. Solis, S. Javed, A. Kamath, X. Tang, J. J. Sadique, M. R. Khan, K. L. Hermstein, K. A. Mahmud, J. A. S. Viloria, S. Hawkins, Y. Cui, A. Dey, Y. Liu, A. Gurbuz, J. Camp, R. Ahmad, J. V. D. Merwe, G. Zussman, M. Kurum, N. Kamesh, Z. Guan, D. Pados, G. Sklivanitis, I. Guvenc, M. Sichitiu, M. Mushi, and R. Dutta "Collection: UAV-Based Wireless Multi-Modal Measurements From AERPAW Autonomous Data Mule (AADM) Challenge in Digital Twin and Real-World Environments," in IEEE Data Descriptions, vol. 3, pp. 354-366, 2026, doi: 10.1109/IEEEDATA.2026.3685296.
- P. F. Pérez, I. Bravo, A. Kamath, C. Fiandrino and J. Widmer, "ChronoProf: Profiling Time Series Forecasters and Classifiers in Mobile Networks with Explainable AI," 2025 IEEE 26th International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoWMoM), Fort Worth, TX, USA, 2025, pp. 41-50, doi: 10.1109/WoWMoM65615.2025.00019.

Research Experience

- **University of Utah** — Salt Lake City, UT
  Wireless data discovery — *March 2026 - present*
  - Building a data discovery system that can translate a user's natural language request to a canonical time-series dataset containing relevant columns and experimental metadata. Research techniques used involve designing dense index structures, agentic search algorithms, and data wrangling automation.
- **University of Utah** — Salt Lake City, UT
  Wireless data wrangling — *Aug 2025 - March 2026*
  - Built a domain-specific wireless data wrangling assistant that automates wrangling multiple time-series data tables into one canonical dataset via DSL (Domain Specific Language) programmed operations to produce analysis ready wireless datasets.
- **IMDEA Networks Institute** — Madrid, Spain
  eXplainable AI systems for mobile data — *May 2024 - Aug 2024*
  - Exploring new methodologies to generate robust XAI (eXplainable AI) results for time-series forecasting models such as PatchTST, TSMixer, and DLinear. Worked with Dr. Claudio Fiandrino in the Lab for Resilient AI Networking.

Awards

- Winner of the AERPAW Autonomous Data Mule (AADM) Challenge 2025 held at North Carolina State University.
- Awarded NSF student travel grant to attend the Open6G+AI School 2026 at Northeastern University.
- Awarded NSF student travel grant to attend the AERPAW Community Workshop 2025 at North Carolina State University.

Work Experience

- **Baxter** Bengaluru, India
  Network Automation Engineer *Sep 2020 - Jul 2023*
  - Built and maintained containerized **Python** network automation applications and **REST API** services with frameworks such as **Django** hosted on **AWS Elastic Container Service** to manage network data and automate network operations for **4000+ network devices**
    Skills: ECS, EC2, CloudFormation, S3, RDS, Python, REST APIs, GraphQL, Django, PostgreSQL
  - Developed a **distributed telemetry** system that collects and stores **1M network metrics / 1.4B data points** every day from the Baxter network in a **time-series database** consumed through **Grafana** dashboards and alert notifications produced by **Alertmanager** – bringing down MTTR to a matter of minutes
    Skills: SNMP, DNS, HTTP, TLS, NGINX, Prometheus, Thanos, Telegraf, Grafana, Alertmanager

Skills

- **Wireless systems**: Deploying O-CUDU, OpenAirInterface, and Open5GS powered 5G networks, and repeatable experiments with gnuradio.
- **Data systems**: Deploying large scale data lake infrastructure using Apache Spark and Apache Iceberg for the POWDER testbed.
- **Software engineering**: Built and maintained Python and Go application service models over infrastructure such as Amazon ECS, Kubernetes, and docker-compose.
- **Software observability**: Deployed Telegraf and Influx collector swarms that streamed telemetry data to Prometheus and Thanos databases.