

# ADNAN BASHIR

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## EDUCATION

- DEC 2025 **Ph.D. Computer Science** – UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NM USA  
Focus: Machine Learning | Advisor: Dr. Trilce Estrada 🔗  
Thesis: Unsupervised Learning and Applied LLMs for data stream modeling.
- DEC 2015 **M.S. Computer Science** – UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NM USA  
Focus: Machine Learning and Data Science
- AUG 2012 **B.E. Electronics Engineering** – NATIONAL UNIVERSITY OF SCIENCE & TECHNOLOGY, PAKISTAN  
Final Project: Spectrum-aware dynamic channel assignment in cognitive radio networks

## SELECTIVE WORK EXPERIENCE & PROJECTS

- AUG 2018 PRESENT **Machine Learning Engineer**  
Data Science Lab – UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NM USA
- DSX** 🔗 Designed and led development of an **LLM-based state detection framework**, integrating **foundation models**, **representation learning**, and **explainable AI** to identify latent states and generate insights in multivariate streaming data. Enabled new research in **time-series explainability** and tool adoption.
- DRUM** 🔗 Architected and operationalized DRUM, a robust **unsupervised learning platform** for **change point detection** and **real-time inference** in streaming data. Improved **regime shift detection**, reduced anomaly response by 30%, and published results at DAWAK 2023, with ongoing references by peer researchers.
- TSX** 🔗 Developed a production-ready **healthcare data analytics solution**, leveraging **deep learning** and **predictive analytics** for automated anomaly detection, patient outcome forecasting, and real-time data visualization. Enhanced **data-driven decision making** and improved care quality for healthcare stakeholders.
- APR 2025 PRESENT **Lead Data Steward**  
Department of Workforce Solutions – STATE OF NEW MEXICO, ALBUQUERQUE, NM USA
- DRIFT** 🔗 Designed and launched DRIFT, a secure, enterprise-scale data access and orchestration platform, embedding **real-time anomaly detection**, **data governance**, and automated **compliance** enforcement to support high-volume, high-sensitivity data streams for state operations. Led the cross team implementation, standardizing access and monitoring across 10+ business units, streamlining analytics for mission critical workflows, and reducing end-to-end data request turnaround by 40%. Recognized internally as a catalyst for modernizing statewide data management practices.
- DEC 2016 DEC 2017 **OTF Fellow** 🔗  
Radio Free Asia – (OPEN TECHNOLOGY FUND) & UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, NM USA
- Bot-D** 🔗 Conducted and managed large-scale, real-time social media analytics for **election data integrity**, deploying cutting-edge **bot detection**, **anomaly analytics**, and **automated monitoring** on multi-million tweet datasets. Drove collaboration with election integrity NGOs, producing actionable reports and open datasets that informed policy recommendations and were cited in international academic publications.
- AV** 🔗 Designed and implemented advanced **information security** and **malware detection** models using **machine learning**, **statistical modeling**, and **risk modeling** techniques. Led research on novel web-based attack vectors and collaborated with global cybersecurity partners to deploy countermeasures, ultimately improving detection rates and supporting the development of policy recommendations for transnational security.

## PUBLICATIONS

- AUG 2023 Real Time Detection of Regime Shifts in Multivariate Data Streams 🔗 – DAWAK 🔗
- APR 2021 Girasol, a Sky Imaging and Global Solar Irradiance Dataset 🔗 – DATA IN BRIEF 🔗
- DEC 2020 LADPU Smart Meter Data 🔗 – NSF PUBLIC ACCESS REPOSITORY 🔗
- APR 2019 Presidential Elections in Ecuador: Bot Presence in Twitter 🔗 – ICEDEG 🔗
- MAY 2016 Infect-me-not: A user-centric and site-centric study of web-based malware 🔗 – IFIP 🔗
- OCT 2012 Spectrum-aware dynamic channel assignment in cognitive radio networks 🔗 – ICET 🔗

## SKILLS

- CODING Python (TensorFlow, PyTorch, CoreFlow, Sklearn, Numba), Bash, Scala, SQL, L<sup>A</sup>T<sub>E</sub>X
- CLOUD AWS (SageMaker, Bedrock, Lambda, EC2, Kinesis), Databricks, Snowpark
- ML-OPS CI/CD, Apache Kafka, Model Monitoring, Automation, ETL Pipeline, GPU Kernel Optimization (CUDA)
- DOMAIN LLMs, Deep Learning, Unsupervised Models, Streaming Data Analytics