Gabriel Urbaitis

Data Scientist III – COSMIAC Research Center, University of New Mexico

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Professional Summary

Interdisciplinary data scientist with advanced expertise in machine learning, signal processing, and network analytics. Over eight years of combined professional experience—more than six years full-time—spanning applied research, software engineering, and data-driven systems design. Currently serves as **Data Scientist III at the University of New Mexico's COSMIAC Research Center**, leading development of predictive models for GNSS spoofing detection, jamming classification, and SD-WAN telemetry analysis. Demonstrated ability to manage large, complex datasets; apply advanced statistical and computational methods; and coordinate cross-functional research teams. Published co-author on two IEEE Radiation Effects Data Workshop papers and presenter at Small Satellite Conference 2025. Provides mentorship, authors technical documentation, and contributes to proposal and publication development in alignment with UNM's research mission.

Core Competencies

- Advanced statistical modeling, machine learning, and data mining
- Predictive analytics, signal processing, and feature engineering
- Python, PyTorch, TensorFlow, LightGBM, Scikit-learn, Pandas, NumPy
- Data management and visualization (Matplotlib, Seaborn, Plotly)
- GNSS spoofing/jamming detection, spectrum analysis, and sensor fusion
- SD-WAN telemetry analytics and network performance modeling
- Proposal and technical report preparation for grants and contracts
- Experimental design, hypothesis testing, and performance evaluation
- Cross-disciplinary research collaboration and stakeholder communication
- Mentorship, training, and leadership of student and junior staff researchers

Professional Experience

Data Scientist III — COSMIAC Research Center, University of New Mexico

May 2026 – Present

- **Serves as subject-matter expert** in large-scale data capture, mining, and analysis across GNSS, satellite communications, and SD-WAN research domains.
- **Provides strategic guidance** to stakeholders and sponsors by translating analytic results into actionable system-level insights for secure communications architectures.
- **Contributes to proposal and contract development**, including preparation of analytical sections, preliminary data, and technical reports for ongoing research initiatives.
- **Mentors student researchers and interns** in data analysis, coding practices, and experimental methodology, fostering cross-functional collaboration.
- **Contributed to collaborative proposal and white paper development**, authoring the technical abstract and coordinating with project leads during PI preparation meetings to align research objectives and deliverables.

Programmer Analyst III — COSMIAC Research Center, University of New Mexico

January 2025 – April 2026

- **Designs and implements predictive modeling pipelines** using deep convolutional neural networks (JDCNN) and gradient-boosted ensembles (LightGBM) to classify jamming types and detect spoofing events in multi-terabyte signal datasets.
- **Built and trained deep learning models** for GPS-jamming classification using spectrogram images, achieving high-accuracy CNN baselines and expanded dataset robustness through configurable SNR-level augmentation and noise-injection automation.
- **Leads interdisciplinary data-science integration**, collaborating with RF engineers, network architects, and software developers to fuse telemetry, spectrum, and spatial data into unified analytic models.
- **Develops and manages complex databases and feature-extraction systems**, ensuring reproducibility and computational efficiency in high-volume experimental workflows.
- **Authored and presented findings** on GNSS data transmission and spoofing-detection accuracy at the Small Satellite Conference 2025; contributing author on follow-up manuscript for journal submission.

Programmer Analyst I — Early Childhood Services Center, University of New Mexico

May 2021 – December 2024

- **Developed full-stack web solutions** in Laravel Nova, Vue, and Inertia to automate data management, document workflows, and reporting for the ECSC Intranet and NewMexicoKids.org portal.
- **Designed SQL-based inventory and document repository modules**, migrating legacy Excel data into relational databases and providing CRUD interfaces for administrative staff.
- **Enhanced statewide childcare referral platform**, implementing new provider attributes, notes functionality, and dynamic table views for administrators.
- **Automated event scheduling** by parsing form submissions into ICS calendar entries with recurring-date support, improving event publication workflows.
- **Maintained and modernized PHP codebase**, upgrading to PHP 8.1 and improving reliability through refactoring and modular design.

Microsoft Dynamics CRM Developer — Quintrix Solutions

March 2020 – April 2021

- **Developed C# plugins for Microsoft Dynamics 365**, automating updates of Accounts, Contacts, and Opportunities from structured JSON data.
- **Collaborated with Cognizant's Microsoft Business Group** to map CRM object taxonomies, business processes, workflows, and validation rules for enterprise-level client accounts.
- Applied knowledge of **object-oriented programming, REST APIs, and business logic design** to extend CRM platform functionality.

Associate Consultant — Atos Syntel

April 2019 – November 2019

- Completed **software engineering training** in SQL, PL/SQL, Java, HTML/CSS, and ReactJS; developed employee management modules in Java SpringBoot.
- **Created Salesforce Apex code and Lightning components** for workflow visualization of seating arrangements and approval queues.
- Contributed to **frontend and backend development** of employee submission systems with integrated PDF viewer and data validation.

Research Engineer — COSMIAC Research Center, University of New Mexico

June 2016 – May 2018

- **Developed data acquisition and visualization systems** for the Radiation Hardened Electronic Memory Experiment (RHEME) using JavaFX.
- **Parsed terabyte-scale binary telemetry data** into CSV for statistical analysis of radiation-induced single event upsets.
- Assisted in **testing and measurement automation** of mixed-signal ADC/DAC microcircuits (MAX1257/1258), integrating multimeters and power supplies for automated voltage sweep analysis using LabVIEW.

Academic Research Experience

Graduate Machine Learning and Artificial Intelligence Projects — University of New Mexico

2023 – 2025

- **Developed and compared neural architectures** for signal, image, and graph data, including Vision Transformers (ViT), Euclidean-equivariant Graph Neural Networks (EGNN), and multimodal retrieval systems combining textual and structural embeddings.
- **Led data-preparation and evaluation pipelines** for multimodal argument retrieval, implementing FAISS-based similarity search, MiniLM + Node2Vec embeddings, and attention-based fusion methods.
- **Performed clustering and dimensionality-reduction analyses** (t-SNE, UMAP, K-Means) to assess dataset label quality and class separation; applied statistical validation metrics (ARI, NMI).
- **Documented experimental design, ablation studies, and results** in technical reports and research presentations aligned with course-level publication standards.

Education

Master of Science – Computer Science
University of New Mexico, Albuquerque, NM (2025) Grade: 4.19

- Concentration: Machine Learning & Intelligent Systems
- Relevant Coursework: Advanced Machine Learning, Neural Networks, Cybersecurity, Software Foundations, Graduate Algorithms, Philosophy of Mathematics

Bachelor of Science – Computer Science
University of New Mexico, Albuquerque, NM (2018) Grade: 3.50

- Minor: Mathematics

Publications & Presentations

- **Alexander, D., Vera, A., Aarestad, J., & Urbaitis, G.** (2017). *Total Dose Testing of Advanced Mixed-Signal ADC/DAC Microcircuits*. In **2017 IEEE Radiation Effects Data Workshop (REDW)**, New Orleans, LA, USA [DOI: 10.1109/NSREC.2017.8115443]

- **Alexander, D., Vera, A., Morris, W., Christian, J., Gifford, D., Avery, K., Urbaitis, G., Li, C., & Daniels, Z.**(2018). *Single Event Upset Results from the Radiation Hardened Electronic Memory Experiment on the International Space Station*. In **2018 IEEE Radiation Effects Data Workshop (REDW)**, Waikoloa, HI, USA. [10.1109/NSREC.2018.8584285]

- **Small Satellite Conference 2025 — Poster Session 3**, Salt Lake City, UT.
  Presented findings on GNSS data transmission, spoofing detection accuracy, and real-time visualization results derived from COSMIAC's contribution to the "Advancing Real-Time GNSS Data Transmission and Education Through ATAK Integration" project. Preparing co-authored manuscript expanding on those results for journal submission.

Technical Skills & Tools

Programming & Data Analysis:
Python (NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, Plotly), PyTorch, TensorFlow, LightGBM, FAISS, Node2Vec, NetworkX, SQL, Bash

Machine Learning & Modeling:
Deep Learning (CNNs, Transformers, Autoencoders), Graph Neural Networks (EGNN, GAT), Ensemble Learning, Dimensionality Reduction (PCA, t-SNE, UMAP), Clustering (K-Means, DBSCAN), Feature Engineering, Predictive Modeling

Signal & Image Processing:
Spectrogram Analysis, GNSS Spoofing/Jamming Detection, RF Signal Classification, Time-Series Filtering, Statistical Noise Modeling (SNR-dependent datasets)

Data Management & Visualization:
Big Data Curation, Preprocessing Pipelines, Dataset Augmentation, Data Integrity Auditing, Experimental Design, Scientific Visualization, Dashboarding

Research & Engineering Tools:
Git, Linux/Ubuntu, Docker, MATLAB, LaTeX, Jupyter, OpenCV, VS Code, PyCharm, AWS (EC2, S3), Starlink Networking Analytics, Cisco SD-WAN Monitoring

Scientific Communication & Leadership:
Proposal Development, Grant/Contract Support, Technical Report Writing, Peer-Reviewed Publication Preparation, Data Presentation, Mentorship & Student Training, Cross-Disciplinary Collaboration

University of New Mexico Internal Candidate – References Available Upon Request