Angel A. Barrera-Gomez

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Professional Summary

Computer Systems Engineer with an M.S. in Applied Data Science, transitioning from data analytics into applied computer vision and machine learning. Built a strong foundation in data modeling, statistical learning, and scalable pipelines, with specialization in neural networks during graduate studies. Conducted applied research at Oak Ridge National Laboratory on 3D LiDAR point cloud semantic segmentation, developing graph-based deep learning models under real-world constraints such as noise, structural variability, and class imbalance. Interests include Computer Vision, 3D perception, and scalable Agentic AI systems.

Technical Skills

Machine Learning & AI: PyTorch, Scikit-Learn, CNNs, 3D Point Clouds, Open3D, Linear Regression, Clustering, K-Nearest Neighbors, Class Imbalance, Statistical Modeling, Bootstrapping.
MLOps & Deployment: Docker, GitHub Actions, Flask, Linux CLI, ONNX (basic), model evaluation pipelines.
Data Engineering: Advanced SQL, Python (Pandas, NumPy), PostgreSQL, BigQuery, ETL/ELT Pipelines, dbt concepts.
Cloud & Infraestructure: AWS (EC2, S3), Render, Linux, CI/CD, Containerization.
Analytics & BI: Power BI (Modeling, DAX), Tableau, Looker, Semantic Layer Design.
Other: Git, REST APIs, Jupyter, R (tidyverse, caret).

Education

Master of Science in Applied Data Science — Dec 2025
East Tennessee State University — GPA: 3.79 — *Johnson City, TN*

Bachelor of Science in Computer Systems Engineering — May 2024
Universidad Evangélica de El Salvador — GPA: 3.6 — *San Salvador, El Salvador*

Professional Experience

Data Science Student Intern — Aug 2025 – Dec 2025
Oak Ridge National Laboratory (ORNL) — *Remote*

- Conducted applied research in 3D plant phenotyping using LiDAR point clouds and geometry-aware deep learning.
- Designed and implemented a Dynamic Edge Convolutional Neural Network (DECNN) using PyTorch and PyTorch Geometric, leveraging radius-based dynamic graph construction and EdgeConv layers for semantic segmentation.
- Achieved 65.58% mean IoU and 82% recall for biologically critical stem detection under severe class imbalance.
- Engineered geometric descriptors (surface normals, linearity, planarity, sphericity, relative height) using NumPy and Open3D to improve structural discrimination.
- Developed a custom hybrid loss function (weighted Cross-Entropy + Dice) and implemented bootstrap evaluation (1,000 iterations) with 95% confidence intervals.
- Applied DBSCAN and PCA-based post-processing to refine cylindrical structures and improve geometric consistency in predictions.
- Established a manual annotation protocol using CloudCompare to generate high-quality point-wise ground truth labels across four semantic classes.
- Open-source research code with full training, evaluation, and visualization pipeline (GitHub).

Data Analytics Engineer — Jan 2023 – Aug 2024
AES Corporation — *San Salvador, El Salvador*

- Developed optimized SQL models and semantic layers in BigQuery integrating SAP S/4HANA data used across 180+ analytics tools.
- Validated RICEFW logic and performed field-level mapping across Oracle and SAP, ensuring data integrity across mission-critical systems.
- Implemented CI/CD workflows for analytics artifacts and standardized metadata documentation with Atlan.

Data Operations Analyst — Nov 2021 – Dec 2022
Executel — *San Salvador, El Salvador*

- Monitored and optimized dialer pipelines for 30+ agents, improving lead processing reliability and data ingestion quality.
- Built robust preprocessing routines using Excel automation for high-volume lead datasets.
- Led technical implementations for CRM/ERP integrations with external clients.

DevOps Engineer Intern — Apr 2022 – Nov 2022
Resultier — *Remote*

- Configured AWS EC2 infrastructure and Linux-based deployments for production applications.
- Developed CI/CD pipelines using GitHub Actions and containerized services using Docker for reproducible environments.

Operations Data Analyst — Jul 2019 – Oct 2021
The Office Gurus — *San Salvador, El Salvador*

- Automated reporting workflows (Excel VBA, SQL), ensuring consistent data quality across multiple internal systems.

Graduate Research & Technical Projects

Apex Capital: Decision Support System — Data Engineering Nov 2025

- Developed a Python ETL pipeline to harmonize structured S&P500 data with ESG textual attributes using regex-driven normalization.
- Designed a relational MySQL schema with strict typing for financial analytics.
- Built 3 Power BI dashboards with over 10 DAX measures to support real-time portfolio comparison.

CRM-to-PostgreSQL ETL for Real Estate Analytics — Data Engineering Jun 2025 – Sept 2025

- Built an ETL pipeline using Python and Flask to connect a CRM to a database hosted on Render, replacing manual weekly reporting with real-time ingestion and projections in Power BI.
- Overcame CRM API rate limits by designing a scalable PostgreSQL architecture that ingested a full historical JSONB dump, enabling the reconstruction of six years of data.
- Implemented semantic modeling, KPI visualizations, and created over 60 DAX measures to deliver 8+ Power BI dashboards used by executives, managers, and agents across the business.

EEG-Based Motor Movement Prediction — Deep Learning Jan 2025 – May 2025

- Built a 1D CNN in PyTorch achieving 76.6% accuracy on 64-channel EEG motor-imagery classification.
- Developed preprocessing pipeline (bandpass filtering, normalization) across 12k+ trials.
- Addressed class imbalance by restructuring label distribution, improving boundary clarity.

Predicting Hospital Readmission — Statistical Modeling Nov 2024

- Engineered preprocessing in R (Winsorization, scaling) for 25k patient records.
- Built logistic regression with AIC-based feature selection achieving ROC-AUC 0.66.
- Identified key predictors influencing readmission probability.

Certifications

Python for Data Science and AI Jan 2024
IBM (Coursera)

Data Engineering Essentials Nov 2023
IBM (Coursera)

Databases and SQL for Data Science Nov 2023
IBM (Coursera)

Google Cloud Data Analytics Professional Certificate Apr 2023
Google Cloud (Coursera)
Specialization in BigQuery, Data Preparation, and Applied ML.

Volunteering

English–Spanish Interpreter Jul 2025 – Present
First Christian Church *Johnson City, TN*

- Provide live English-to-Spanish interpretation during weekly services for a Spanish-speaking audience, during the 11:15 service on Sundays.

Languages

English: C2 (Full Professional Proficiency)
Spanish: Native Speaker