Maximiliano Alvarado

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Education:

B.S. **Mathematics** in **Data Science**, **Computer Science** Minor - University of Houston (May 2023)

Work:

Data Analyst - Group 1 Automotive (June 2023 - Present)

- Built and optimized multi-departmental **analytics pipelines in SQL/Qlik** to model performance trends and guide strategic decisions; **automated KPI tracking** and delivered insights improving efficiency across teams.
- Partnered with **Data Science teams** to prototype **forecasting** and **model-driven dashboards**, bridging analytics and predictive modeling.
- Contributed to the **development of ~40%** of all active Qlik dashboards; **upgraded 85%** and **optimized 55%** for performance and efficiency.
- Awarded **Quarterly Productivity Award eight consecutive times** for outstanding performance and consistency.

Projects:

Predictive Maintenance using a Wide & Deep Neural Network - GITHUB

- Built a **deep learning classifier** to detect machine failures from sensor data using a **custom Wide & Deep ANN.**
- **Keras Wide+Deep** with **BatchNorm**, **L1/L2**, **EarlyStopping**, **ReduceLROnPlateau**; tuning via **SciKeras + RandomizedSearchCV**
- **Result: ~98.7% test accuracy** (best epoch ~**99.1%**); TensorBoard for experiment tracking.
- Stack: Python, Pandas/NumPy, TensorFlow/Keras, SciKeras, Seaborn, Matplotlib**.**

Used Car Price Estimator with Random Forest Regression - GITHUB - STREAMLIT

- Developed a Scikit-Learn **regression pipeline** to predict vehicle prices, including **data preprocessing**, **imputation**, **encoding**, and **scaling**.
- Performed **hyperparameter tuning** on a **Random Forest** model using cross-validation.
- **Result:** $R^2 \approx$ **0.96**, MAE ≈ **2,016**, RMSE ≈ **3,002**.
- Deployed the model via an **interactive Streamlit app** for real-time predictions.

Traffic Sign Classification using Convolutional Neural Networks - GITHUB

- Designed and trained a custom **CNN** using **TensorFlow/Keras** to classify 43 German traffic sign categories (**GTSRB dataset**).
- Image pipeline with **OpenCV** (resize 64×64×3, normalize), one-hot labels; **Conv2D-BN-LeakyReLU-Dropout** stacks + **TensorBoard**
- Performed **image preprocessing**, **one-hot label encoding**, and **model tuning** with **SciKeras** and **TensorBoard**.
- Optimized architecture using **LeakyReLU**, **Dropout**, and **ReduceLROnPlateau** callbacks.
- **Result: ~98–99%** accuracy.

Instacart Reorder Prediction End-to-End Classification Pipeline (3.4M+ orders) - GITHUB

- Engineered a **SQL** feature store joining **6** relational tables (orders, order-products, users, products, aisles, departments).
- Engineered user–product features: **recency**, **frequency**, **days_since_prior_order**, **cart_position**, **reorder ratio**, **hour/day** signals (**~30** total features).
- Modeled with a **Keras** neural network wrapped in **SciKeras**, integrated into a **Scikit-Learn** pipeline; tuned via **RandomizedSearchCV**; regularized with **BatchNorm/Dropout**, **EarlyStopping**, **ReduceLROnPlateau.**

Skills:

- ***Programming:*** Python (Pandas, NumPy, SciPy), SQL, C#, HTML/CSS, Java
- ***Machine Learning:*** TensorFlow/Keras, Scikit-Learn
- ***Analytics/BI:*** Qlik (Sense + Data Load Editor), TensorBoard, Power BI
- ***Data Eng:*** SQL Server/Postgres/SQLite, ETL/ELT, dbt, performance tuning
- ***Apps/Tools***: Streamlit, Git/GitHub, ASP.NET, Angular, Bootstrap, Excel/Office

Certificates:

- DeepLearning.AI **TensorFlow Developer -** CERTIFICATE
- IBM **Data Science Professional -** CERTIFICATE

Coursework:

- **Data Science & Machine Learning,** Database Management Systems, Programming & Data Structures, **Data Science & Statistical Learning**, Data Structures & Algorithms, **Differential Equations**, Software Design

Languages: **Fluent** in both English & Spanish (Native Speaker)