

Gerardo Jose Barberena Jiron

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SUMMARY

Seasoned AI/ML engineer with over 20 years of software development experience, evolving from big data engineering to advanced machine learning and deep learning solutions. Skilled in Python, TensorFlow, PyTorch, Spark, and Hadoop, with proven expertise designing and deploying AI-driven cybersecurity, real-time analytics, and robotics implementations on NVIDIA Jetson Nano for computer vision automation. Passionate about leveraging data to drive innovation, solve complex business challenges, and deliver robust, scalable solutions across AWS, Azure, and GCP. Experienced in harnessing large language models (LLMs) to streamline enterprise processes and accelerate automation across diverse domains.

TECHNICAL SKILLS

Programming Languages: Python, Java, C, C++, SQL, Visual Basic, C#

Deep Learning Frameworks: TensorFlow, PyTorch, Keras, Caffe

Libraries & Tools: NumPy, Pandas, Scikit-learn, OpenCV, NLTK, Git, Docker

Big Data & Cloud: Hadoop, Spark, Kafka, AWS (EC2, EMR, SageMaker), Azure, GCP, Kubernetes

Data Visualization: Matplotlib, Seaborn, Plotly, Power BI, Tableau

MLOps: Airflow, MLflow, Kubeflow, Jenkins

EXPERIENCE

Neuranta.com - AI-Driven Voice & LLM Platform

PRAGMATIC S.A. de C.V. | Applied Machine Learning Engineer | Nov 2022 - Present | Python, C++, Kubernetes, Docker

- Developed a multimodal conversational system combining ASR (Whisper), TTS, and LLM capabilities with RAG implementation.
- Integrated a vector database (Milvus) for semantic retrieval and context management, enabling dynamic call flows.
- Orchestrated microservices with Kubernetes and Docker, ensuring high availability and horizontal scalability.
- Employed GPU-accelerated pipelines (NVIDIA H100) to reduce latency in real-time speech recognition and LLM-based text generation.

Xtrmedata Cybersecurity Platform

PRAGMATIC S.A. de C.V. | Machine Learning Developer | Mar 2021 - Nov 2022 | Python, TensorFlow, Spark, Docker, AWS

- Designed and implemented deep learning models (CNN, RNN) for real-time person counting via RTSP video feeds.
- Integrated ML algorithms to analyze user behavior, correlate SIEM events, and automate incident response.
- Leveraged Spark for large-scale data ingestion and TensorFlow for advanced threat detection.
- Built custom monitoring agents to collect real-time data from network devices, integrating with Spark pipelines for large-scale analysis.

Business Analytics Platform - Alsea S.A. de C.V.

IT GUARDIAN & CONSULTING SERVICES S.A. de C.V. | Machine Learning Developer | Nov 2014 - Dec 2020 | Python, AWS (EC2, EMR), Spark, Hadoop

- Developed and deployed ML models for real-time anomaly detection and camera-based analytics.
- Built an end-to-end platform to monitor transactions, electric meters, and network traffic.
- Unified POS transaction data from multiple Alsea-owned brands (Starbucks, Domino's) to detect real-time anomalies and optimize sales operations.
- Built and maintained ETL pipelines on AWS (EC2, EMR) for large-scale ingestion, integrating camera feeds and electric meter data.

Financial Analytics System

IT GUARDIAN & CONSULTING S.A. de C.V. | Intermediate Software Engineer | Dec 2013 - Sep 2014 | Python, Spark, Hadoop

- Implemented ML algorithms (A/B testing, association rules, gradient boosting) to identify trading patterns.
- Developed predictive models to forecast market trends, optimizing automated trading desk operations.
- Employed Spark on Hadoop for real-time data ingestion, feature engineering, and model training.
- Created interactive dashboards and real-time reporting tools for traders.

SCADA Monitoring for PEMEX

SENSE SISTEMAS DE MONITOREO S.A. de C.V. | Developer | Jan 2012 - Sep 2013 | Visual Basic, Flex, MySQL/MongoDB

- Integrated deep learning techniques to analyze sensor data from 1,500 gas wells in real time.
- Leveraged MongoDB map-reduce for geolocation-based anomaly detection and operational insights.
- Enabled remote command execution and real-time dashboards to improve maintenance decisions.
- Integrated advanced GIS mapping tools to visually correlate sensor anomalies with geographical locations.

SIAVE-ADUANAS Customs Automation

SENSE SISTEMAS DE MONITOREO S.A. de C.V. | Developer | Apr 2009 - Oct 2011 | PHP, Flash, MySQL

- Developed a business rules engine with ML-based heuristic predictions to analyze customs data.
- Enhanced anomaly detection and streamlined customs clearance processes for high-volume transactions.
- Implemented a real-time alert system that flagged high-risk shipments based on cargo details and historical patterns.
- Integrated external data sources (e.g., government databases) to enhance compliance checks.

EDUCATION

National University of Engineering - B.S. in Systems Engineering | Managua, Nicaragua | 1997 - 2001

Harmon Hall - Advanced English Proficiency | Mexico City | 2007 - 2009

Secretaria de Educacion Publica (SEP) - Examen EGAL Acuerdo 286 (Systems Engineering) - Outstanding Result | 2021

Platzi.com - Machine Learning Engineer Program | 2022 - 2023

CERTIFICATIONS

Platzi - Machine Learning Engineer