RAUL E. PENA

MACHINE LEARNING ENGINEER

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Summary

Machine Learning Engineer with a strong foundation in Data Science and a proven track record of developing and deploying innovative AI solutions across both industry and research teams. Successfully transitioned to machine learning, skilled in managing the entire ML lifecycle, from data acquisition to model training, testing, and deployment.

Technical Skills

AI Frameworks	PyTorch, TensorFlow, LLM(LangChain), NumPy, Pandas, Matplotlib, OpenCV.
Deployment Tools	Linux, Gitlab, AWS, Docker, mlFlow, TensorRT.
Programming	Python, C++, SQL, RESTful APIs

Professional Experience

Machine Learning Engineer Autonomous Robots 24.7(AR247), South Korea | 03.2023 – 05.2024

- Led AI development for Traffic Light Recognition and Close-Range Obstacle Detection projects.
- Managed the entire ML development lifecycle (design, data, training, deployment, evaluation) for various AI models.
- Developed and optimized Convolutional Neural Networks (CNNs) for vision tasks using PyTorch/TensorFlow.
- Created synthetic datasets using **Generative AI** tools to enhance training data for vision models.
- Traffic Light Recognition system:
  - **Achieved 100% pass rate** on the government robotics certification test, enabling the company's initial launch.
  - **Increased model accuracy by 20%** in challenging weather conditions (low light, rain, snow, fog) by using feature selection algorithms, cross-validation, transfer learning and data augmentation.
  - **Reduced model inference hardware costs by 54%** (2.4GB to 1.1GB) through model pruning & quantization, enabling efficient execution and improving inference speed.

AI Researcher Assistant IoT & AI Laboratory, South Korea | 02.2021 – 02.2023

- **Employed statistical techniques and traditional mathematical optimization techniques** to analyze electric vehicle battery consumption data and identify optimal driving strategies to minimize energy usage.
- **Built a Chatbot Service** to provide Drug Prescription information to elderly patients. Used **Image-to-Text (OCR)** cloud software and Natural Language Processing (NLP).

Middleware System Engineer Claro Telecom, Dominican Republic | 09.2018 – 02.2021

- **Introduced User Experience reports** of "MiClaro app" by using PowerBI, SQL and Matplotlib to create reports. This led to the introduction of features that reduced user Bounce Rate by 22%.
- Increased system availability by designing **key performance dashboards** that increased IT visibility and lead to a 500% reduction in incidents MTTR (mean time to repair),
- **Managed Large-scale Data Infrastructure**, including Relational Databases (Oracle, Microsoft SQL), Web Services, and Java application clusters.

System Engineer (Performance Monitoring) Datcom4it, Dominican Republic | 01.2017 – 08.2018

Education

MSc. Internet of Things & Artificial Intelligence (4.44/4.5) Korea University, South Korea | 03.2021 – 02.2023

- Coursework: Mathematical Optimization, Advanced Linear Models for Big Data, Data Science & AI.
- Thesis: Developed a multi-agent reinforcement learning model to improve cooperative lane-changing decisions in autonomous vehicles, achieving a 20% travel time reduction in simulated environments. Used Deep Q-Learning and OpenAI HighwayEnv for simulation. (Link).

B.S Computer Systems Engineering INTEC University, Dominican Republic | 11.2014 – 04.2019

- Coursework: Business Analytics & Big Data, Business Intelligence and Data Mining & Discrete Mathematics.
- Thesis: Developed a safe box that used face recognition for authentication. Used Python AWS and NOSQL.

Certifications

- **Big Data Hadoop certification (Edureka, Nov 2020)**: Live Online Training.