Serena Alvarez

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SKILLS

Programming & Tools
- Python, R, MATLAB, MySQL, C++
- PyTorch, Tensorflow, Scikit-Learn, Pandas, NumPy
- Git, Docker, Angular
- HackRF, GNU Radio, QSpectrumAnalyzer

Machine Learning & AI
- Deep learning and neural networks
- Constrative Learning, Self-supervised learning
- Time series analysis, Forecasting
- Classification, Anomaly Detection
- RF signal processing and fingerprinting

Cloud Computing & Infrastructure
- Google Cloud Platform (GCP)
- VM management, GPU provisioning, cost optimization
- MLOps and experiment tracking (ClearML, MLflow)
- Cloud storage and data management (GCS buckets)

Distributed Computing & Data Processing
- Apache Spark, Dask, Coiled
- Large-scale data pipelines and distributed processing
- Big data transformation and analysis
- Data preprocessing and training optimization
- Performance monitoring and bottleneck identification

WORK EXPERIENCE

Electronic Warfare Associates (EWA)

AI/ML Scientist II — Apr 2025 – Present
- Built a scalable distributed compute pipeline using Dask and Coiled for standardized computation of large datasets, reducing 45GB dataset processing from 18 hours to 9 minutes
- Built a resource optimization framework to reduce compute costs by automatically scaling GCP VMs based on workload demands
- Developed MLOps infrastructure using ClearML to automate experiment tracking and model deployment for the team
- Designed and trained classification algorithms for automated drone type identification using RF signal fingerprints
- Created a custom contrastive learning algorithm to train embeddings for improved RF signal fingerprint differentiation
- Mentored an undergraduate intern in building several classification models for pre-trained IQ data embeddings

AI/ML Scientist I — Jul 2023 – Apr 2025
- Developed a custom cost-efficient GPU training tool on GCP to reduce machine learning model training time for the team
- Created anomaly detection algorithms for RF signal fingerprinting to improve signal classification and differentiation using PyTorch and Scikit-Learn
- Contributed to front-end development using Angular for the Tantalum Edge Unit user interface, displaying algorithm results and anomaly detection outputs
- Built standardized Git workflows and documentation to improve team collaboration and version control practices

R&D Intern, Machine Learning / Artificial Intelligence — Jun 2022 – Jul 2023
- Implemented a custom KL Divergence loss function for neural networks to improve fingerprint differentiation in IQ data embeddings
- Created time series-based anomaly detection algorithms for predictive analysis of JTAG data using R
- Gained expertise in Docker containerization to set up development environments with Jupyter, ML tools, and Linux shell on cloud VMs
- Used Spark on GCP to process and transform large datasets

EDUCATION

Master of Data Science, University of California, Irvine — 2023 – 2024
Focus on Machine Learning and Artificial Intelligence

B.A. Quantitative Economics, University of California, Irvine — 2018 – 2022
Specialization in International Issues and Economics
Minors in Mathematics and Statistics

PROJECTS

TravelAware, MDS Capstone Project — Oct 2024 – Dec 2024
Led a team of 6 data scientists in developing Travel Aware, a safety-focused navigation tool that analyzes 990K+ Los Angeles crime records using NLP embeddings and optimization algorithms to provide personalized route recommendations balancing safety risk and travel time.

LEADERSHIP

MDS Program Ambassador, Class of 2024 — Sep 2023 – Dec 2024 | Irvine, CA
Served as MDS Program Ambassador, acting as an advocate for interdisciplinary collaboration and innovation while providing mentorship and liaison support to prospective and current data science students, including leading presentations on career and skills development.