ALBERTO ESPINOSA PÉREZ

AI/ML Engineer
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SUMMARY

AI/ML Engineer with 5 years of experience in deep learning for Earth Observation and ML on GCP. MSc in Deep Learning. Built a self-supervised pretraining and fine-tuning pipeline for ship segmentation on PlanetScope imagery that met the project KPI with only 280 labeled patches. At Ebury, evaluated a production LLM agent and automated ML model deployment with Vertex AI and GitHub Actions.

SKILLS

Deep learning: Python, PyTorch, TensorFlow, scikit-learn, Hugging Face, TorchGeo
LLMs & MLOps: Google ADK, Vertex AI, RAG, LLM-as-judge evaluation, GitHub Actions, Airflow, dbt
Data & infra: SQL, GCP, Docker, Kubernetes, Terraform, Rasterio, GeoPandas, GDAL

EXPERIENCE

Data Engineer · Ebury, Madrid — Jun 2026 – Oct 2026

- Evaluated a production LLM agent with Google ADK and Vertex AI evaluation (CLI and UI): implemented 6 custom metrics (3 code-based, 3 LLM-as-judge) over 5 evaluation datasets.
- Built phase 1 of an MLOps framework on Vertex AI and GitHub Actions for a deployed prediction model, replacing manual deployment steps with automated workflows.
- Migrated Airflow 1 DAGs to Airflow 2 for dbt processes that export data to Google Cloud Storage.

Deimos Space (Indra) · Madrid — Sept 2021 – Jun 2026

AI/ML Engineer — Sept 2024 – Jun 2026

- Developed a ship segmentation model for 3 m PlanetScope imagery (6 bands): masked-autoencoder-style pretraining on 50K fully valid 128×128 patches, then U-Net fine-tuning with a BCE + soft-IoU loss.
- Reached instance IoU 0.536 and F1 0.671 on a held-out test set with only 280 labeled patches (+0.155 IoU over the BCE baseline) and a 0.04% pixel false-positive rate, meeting the project KPI (instance IoU ≥ 0.50).
- Benchmarked 5 loss functions under extreme class imbalance (~5K vessel vs. 4.6M water pixels); BCE + IoU gave the best pixel and instance F1 and IoU.
- Built the preprocessing pipeline (percentile normalization, tiling, UDM2 masking, GeoJSON rasterization) with Rasterio, GeoPandas and GDAL.
- Redesigned the NAOS satellite processor simulator (L0–L2B) with a handler/template architecture, extensible to new sensor projects without structural changes; automated end-to-end validation of processing chains.
- Prototyped LLM-based internal tooling (RAG, agents).

Cloud & Systems Engineer *(intern until Jun 2022)* — Sept 2021 – Sept 2024

- Operated a Kubernetes cluster (2 control-plane nodes) and ~10 VMs on CloudSigma; containerized services with Docker and Helm.
- Provisioned dev/stage/prod environments as code with Terraform.

Software Developer Intern · Sotec Consulting, Madrid — May 2021 – Sept 2021

- Built an internal project and HR management web portal (C#, ASP.NET Core REST API).
- Prototyped and shipped an audiobook iOS app (React Native, JavaScript) with streaming, offline downloads and playback-speed controls.

EDUCATION

MSc Deep Learning for Audio & Video Signal Processing · UAM — Sept 2024 – Jun 2025
GPA 8.12/10 · Thesis: Foundation Model-Based Ship Detection in Satellite Imagery for Maritime Surveillance

BSc Computer Science · Universidad Autónoma de Madrid — 2017 – 2023

LANGUAGES

Spanish (native), English (C1–C2), German (basic)