



Alonso Madroñal

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Experience

Ferrovial | AI Engineer | Madrid , ES | 2025 – Present

- Architected Graph-RAG systems for dynamic context injection in Multi-Agent systems, designing Cloud Native AI solutions.
- Streamlined deployment pipelines in Azure DevOps pipelines with AI-connected MCP servers, achieving a 75% time-to-production in testing phases.
- Engineered cost-efficient agentic architectures optimizing AKS usage and token consumption, lowering operational overhead of deployments.
- Developed AI-driven productivity tools and frameworks to accelerate software development, demonstrating a reduction of ~40% in time-to-ship for engineering teams.

UC3M | NLP Research Assistant | Madrid , ES | Jan 2025 – Oct 2025

- Published author at EMNLP 2025 in NLP, AI and LLM research applied to cultural-linguistic analysis. <https://arxiv.org/abs/2510.11928>
- Developed and enhanced an end-to-end NLP hybrid application for contradiction detection combining AI and LLMs.
- Optimized deployment efficiency in on-premises and cloud environments, integrated microservices with Docker.
- Conducted evaluation on large-scale datasets (+200K samples), optimizing metrics (Precision, Recall and NDCG), and evaluating hallucinations

Amazon | Business Analyst intern (ATS) | Luxembourg , LU | Jun 2024 – Sep 2024

- Designed 3 data ingestion pipelines with AWS Athena & SQL processing +10GB daily.
- Designed dashboards with AWS QuickSight to display business critical KPI's, and generate automatic reports, reducing by 50% our time benchmark
- Created a cloud data pool (+25M rows) to act as a unified source of truth for the +5 teams in the business.
- Optimized performance of existing SQL queries improving maintainability and reducing in average 30% execution times.

Education

UC3M | Sep 2020 – Sep 2025

BSc in Data Science and Engineering & BSc in Telecommunication Engineering.

Skills acquired:

- Graduated with highest honors for my BSc theses, top 4 grades of the promotion.
- Designed a NLP bilingual fact checking system analyzing incoherences in Wikipedia.
- Implemented a page rank algorithm to analyze Wikipedia's hyperlinks with Databricks and Spark.
- Managed Azure resources: VMs, Storage Accounts, Blob Containers, IAM accesses..

Skills & Interests

Technical: Python (numpy, pandas, Sklearn), Bash, Azure Foundry, Excel, MCPs, Agentic AI, AKS.

Languages: Spanish: Native; English: C2; Italian: B2 – conversational.

Interests: I love challenging myself! My interests include philosophy, literature, photography and cinema!