MANUEL CARBONELL, PHD

AI/ML Engineer

🌐 manuvector.net   ✉ manuel.carbonell.nunez@gmail.com

📞 (+34) 699 751 445   ⬡ github.com/manuvector

📍 Barcelona, Spain   in /in/mcarbonellnunez

SUMMARY

AI/ML engineer with broad experience in integrating machine learning technologies into enterprise solutions. My technical expertise includes Computer Vision and NLP models, leveraging latest open-source implementations as well as Azure Cognitive services or GCP. Strong analytical skills, research background in Deep Learning.

SOFTWARE SKILLS

Languages: Python, JavaScript, SQL

Frameworks: numpy, pandas, matplotlib, PyTorch, transformers, OpenCV, AzureML, Django, FastAPI, pytest, React.

Technologies: Linux, Docker, Kubernetes, Azure DevOps, GCP, pgvector, PostgreSQL

EXPERIENCE

1/2024 – 4/2025   AI/ML Engineer   Kantar Media

- Delivered custom Large Multimodal Model and speech-to-text API integrations as FastAPI endpoints, powering a company-wide brand detection in video and audio media content.
- Benchmarked and productionised Hugging Face transformers; integrated pgvector for low-latency semantic search.
- Built retrieval-augmented-generation (RAG) pipelines on Azure Kubernetes Service; fully automated CI/CD with Azure DevOps.
- Led full-stack delivery (Django + React) of an internal knowledge portal adopted by three global teams.

2/2022 – 9/2023   Senior Data Scientist   Quant AI Lab

Metro Madrid (08/2023-09/2023)
- Implemented energy expense physical models for Metro Madrid in python.

Repsol (02/2022-07/2023)
- Led a three person document-analysis squad; designed a RetinaNet + GNN + tesseract pipeline for structured information extraction from document images.
- Authored a shared Python library unifying CV & NLP tools for various Repsol departments; packaged as FastAPI micro-services on Azure.
- Ensured best practices for clean library development including testing, automated documentation, linting and deployment pipeline.

3/2021 – 9/2021   Senior Data Scientist   Huawei

- Benchmarked multilingual Named Entity Recognition models and devised post-processing for fine-grained entity types.
- Implemented entity-linking for knowledge-base ingestion; boosted coverage of news-recommender entities to > 95% accuracy with novel mixture of experts solution.

4/2017 – 12/2020   Industrial PhD Researcher   Computer Vision Center & omni:us

- Training monitoring and evaluation of new DNN architectures with pytorch.
- Invented multi-task CNN–RNN architectures for joint text localisation, transcription and entity recognition in full pages.
- Proposed a Graph Neural Network method for form understanding.
- Worked on exhaustive experimentation monitoring and analysis, research paper writing.

6/2016 – 10/2016   Data Scientist   Ulabox

- Predicted customer churn and lifetime value with deep-learning pipelines in R and Python.

1/2015 – 6/2015   Data Science Intern   Hockerty

- Implemented recommender systems using scikit-learn and k-means clustering.

7/2014 – 9/2014   Software Engineer   Coritel (Accenture)

- Developed COBOL accounting modules for a major Spanish bank.

4/2013 – 7/2013   Assistant Lecturer   University of Hamburg

- Tutored Ordinary Differential Equations sessions in german.

EDUCATION

2017 – 2020	**PhD in Artificial Intelligence.** *Excellent* Thesis: Neural Information Extraction from Semi-structured Documents	**Autonomous University of Barcelona.**
2014 – 2016	**MSc in Modelling for Science and Engineering.** *7.3/10* Specialisation in Data Science.	**Autonomous University of Barcelona**
2012 – 2013	**BSc Mathematics (Erasmus)**	**University of Hamburg**
2009 – 2014	**BSc in Mathematics.** *6.3/10*	**Autonomous University of Barcelona**

PUBLICATIONS

2020	***International Conference on Pattern Recognition*** **(oral)** Named Entity Recognition and Relation Extraction with Graph Neural Networks in Semi-structured Documents
2020	***Pattern Recognition Letters*** A Neural Model for Text Localization, Transcription and NER in Full Pages
2019	***International Conference on Document Analysis and Recognition Workshops*** End-to-End Handwritten Text Detection and Transcription in Full Pages
2018	***International Conference on Document Analysis Systems*** Joint Recognition of Handwritten Text and Named Entities with a Neural End-to-End Model

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LANGUAGES

Spanish: Native   **English**: Bilingual   **German**: Fluent