

# Mario Parreño

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## Summary

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Machine Learning engineer with a proven track record in Computer Vision, NLP, and Generative AI. Passionate about leveraging Deep Learning to solve real-world problems and deliver innovative solutions that save companies time and money. Skilled in transforming complex challenges into practical applications, I am dedicated to developing cutting-edge AI systems that showcase my expertise in automation and problem-solving. My goal is to continue advancing in the field, creating impactful solutions that push the boundaries of artificial intelligence.

## Experience

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### Newfire Global Partners

#### Senior Machine Learning Engineer | 10/2024

Prompt Engineer at Sway AI, an innovative American startup developing a no-code AI platform. Responsible for crafting and optimizing advanced prompts across diverse use cases, enabling seamless and effective AI interactions through strategic prompt engineering. Leverage technical expertise to design precise, context-aware prompts that enhance the platform's performance and user experience.

### Cognizant

#### Senior Data Scientist | 09/2022 - 10/2024

- Increased document processing efficiency by implementing a state-of-the-art multimodal Transformer model. Integrated MLOps pipelines on Azure ML, streamlining multi-stage batch and inference workflows.
- Orchestrated over 500,000 annotations, reducing error rates through quality control processes and continuous improvement.
- Delivered daily business intelligence reports to drive data-driven decision making across the organisation.
- Developed a secure, on-device object recognition and OCR solution for the software testing sector, ensuring privacy while achieving remarkable accuracy on consumer hardware.
- Led a Generative AI project to create a multimodal NLP and CV solution that improved the accuracy of document field extraction across varying scan qualities.
- Reduced manual document processing time by implementing custom object recognition models, OCR and LLMs in the banking sector for various document understanding use cases.

### Solver Intelligent Analytics

#### Deep Learning Engineer | 04/2022 - 09/2023

- Led an interurban road maintenance project by implementing AI-driven predictive analytics.
- Streamlined the entire pipeline from business problem analysis, data labelling, model experimentation, reporting and production. Reduced time to deployment and accelerated project delivery.
- Developed multi-label classification models and damage segmentation algorithms to enable proactive maintenance planning.
- Pioneered stereoscopic depth-mapping technology to enhance 3D defect categorisation and improve repair planning efficiency.
- Achieved road defect detection and segmentation accuracy superior to human performance, resulting in a overall cost reduction for the client.

### Polytechnic University of Valencia

#### Machine Learning Engineer | 04/2018 - 01/2022

- Deep learning researcher, focusing on computer vision, image translation, segmentation, and binary and multi-class classification.
- Developed an AI-based asphalt damage assessment system for the construction sector, reducing manual inspection time and improving accuracy. Enabled data-driven maintenance decisions to increase road maintenance efficiency by prioritising critical repairs and optimising resource allocation.
- Pioneered the application of CycleGAN models to medical imaging, achieving state-of-the-art accuracy in cross-domain adaptability of diagnostic algorithms at an international workshop.

## Education

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Polytechnic University of Valencia | Valencia, Spain

## Master's degree | 09/2018

Artificial Intelligence, Pattern Recognition and Digital Imaging

## Polytechnic University of Valencia | Valencia, Spain

## Bachelor's degree | 09/2017

Informatics Engineering, Computer Science

## Skills

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Deep Learning, Machine Learning, Data Science, Team Management, LLMs, Generative AI, Computer Vision

## Languages

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Spanish, English, Catalan; Valencian

## Publications

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### [DASeGAN: Domain Adaptation and Generalization for Medical Segmentation Tasks via Generative Adversarial Networks](#)

Proposed a method that maps images into a universal domain, unifying the image appearance across different sources. The approach is based on the CycleGAN architecture, using an image generator trained to produce task-specific, realistic images with indistinguishable domains of origin.

### [Deidentifying MRI Data Domain by Iterative Backpropagation](#)

Investigated novel domain adaptation procedure for medical image analysis to address challenges in multi-vendor, multi-center data distribution variations. Developed a method using classifier training and gradient-based image modification to adapt models to unseen data distributions.

### [A deep analysis on high-resolution dermoscopic image classification](#)

Comprehensive analysis of the effectiveness of state-of-the-art deep learning techniques when applied to dermoscopic images. To achieve this goal, several CNN architectures are analysed, measuring how their performance is affected by network size, image resolution, data augmentation process, amount of available data, and model calibration.

## Links

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- [Aidventure](#): My personal blog about the latest trends in Deep Learning. Coded and evaluated some of the most popular architectures and techniques of LLMs for image and text processing. Fine-tuned LLMs models for sequence and token classification, question answering, instruction following, and more.
- [GitHub](#): For my [side projects](#) and [my blog](#), I have more than 50 repositories where I share my experiences with Computer Vision, LLMs, RAG and diffusion models.
- [LinkedIn](#): A more complete view of my background, including my certifications on various platforms, honors and awards.
- [Kaggle](#): Competed in classification, recognition and identification problems. Expert member for 7 years. Ranked in the top 3% competitions and 8% as dataset contributor.