Javier **Montalvo**

Madrid, Spain

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About Me

I am currently a PhD student at VPU Lab, focusing on generating and using synthetic data for various computer vision tasks, like semantic segmentation and depth and pose estimation. I am curious at heart and love doing side projects, learning new things, and tackling challenging problems.

Education

PhD Student in Computer Vision *Madrid, Spain*
Universidad Autónoma de Madrid *Sept 2021 - Current*

- Expected deposit date October 2024

MSc in Deep Learning for Audio and Video Processing *Madrid, Spain*
Universidad Autónoma de Madrid *Sept 2020 - July 2021*

BSc in Mathematics and BSc in Computer Science *Madrid, Spain*
Universidad Autónoma de Madrid *Sept 2013 - June 2020*

Academic Experience

PhD Candidate - Teaching and Research Intern *Madrid, Spain*
Universidad Autónoma de Madrid / vpulab *2021 - Current*

- Focused on synthetic data generation and exploitation. Some of my works include building a dataset generation tool using Unity Engine for spacecraft navigation imagery. Training with images generated with our simulator reduced pose estimation error rates by up to three times compared to other datasets.
- Explored alternative ways of generating synthetic data with simulation tools to exploit contrastive learning in unsupervised domain adaptation in multiple domains.
- Experience with state-of-the-art algorithms for different computer vision tasks and unsupervised domain adaptation, with a strong focus in semantic segmentation.
- Assisting teacher and mentored a master thesis focused on LiDAR imaging.

Professional Experience

Co-Founder and Backend Engineer - Vooyai *Sept 2022 - Sept 2023*

Vooyai is an AI-powered platform for destination discovery with over 1,000 users. I developed the application backend, and used multiple technologies (Node,Docker,AWS,MongoDB) and APIs (OpenAI,Google Places, Mapbox, Stripe).

Co-Founder and Full Stack Engineer - Quackmate *Nov 2023 - Mar 2024*

Quackmate is a social network manager with generative capabilities designed to streamline content creation for small businesses. Focused on image generation and post scheduling and analytics. Built with Next.js, Supabase, and Cloudflare R2 for data storage.

NLP Consulting - Self Employed *May 2024*

Assisted Blinko (London-based startup) in preparing a pitch for Greek banks on leveraging LLM assistants capabilities, and how to reduce their hallucination rates by providing them with additional context and retrievable information. This helped Blinko pivot to a new business model focused on providing AI-powered tools to banks.

Publications

- **Javier Montalvo** et al. "Exploiting semantic segmentation to boost reinforcement learning in video game environments", *Multimedia Tools and Applications*, 2023.
- **Javier Montalvo** et al. "SPIN: Spacecraft Imagery for Navigation", *arXiv preprint*, 2024.
- **Javier Montalvo** et al. "SynthmanticLiDAR: A Synthetic Dataset for Semantic Segmentation on LiDAR Imaging", *Accepted on International Conference on Image Processing*, 2024.
- **Javier Montalvo** et al. "An image-processing toolkit for remote photoplethysmography", *Multimedia Tools and Applications*, 2024.
- Cecilia Diana-Albelda et al. (including **Javier Montalvo**) "Self-supervised Monocular Depth Estimation on Unseen Synthetic Cameras", *Iberoamerican Congress on Pattern Recognition*, 2023.

Skills

Programming	Experienced with Python, Javascript, C#, C, Java, and Latex. Familiar with Haskell and PhP.
Machine Learning	Experienced with libraries such as Tensorflow, Pytorch or OpenCV, and experiment tracking tools such as Tensorboard or ClearML also familiar with visual reporting tools like Gradio and Recharts.
Languages	Spanish (Native), English (C1,CEFR).
Interests	Guitar player, golf enthusiast, entrepreneur.