Juan Gutiérrez

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EDUCATION

Sep 2023 – Present	**Ph.D. in Signal Processing & Machine Learning** *Universidad Politécnica de Madrid (UPM)*	Madrid, Spain
Sep 2020 – Jun 2023	**M.S. in Telecommunications Engineering** *Universidad Politécnica de Madrid* – Scholarship at *TU Hamburg*, Germany (Oct 2021 – Sep 2022)	Madrid, Spain
Sep 2016 – Sep 2020	**B.S. in Electronic and Telecommunications Engineering** *Universidad de Málaga*	Málaga, Spain

SKILLS

Research Topics:	Self-Supervised Learning (SSL), Multimodal Learning & Data Efficiency
Frameworks and Tools:	C, C++, Python, PyTorch, TensorFlow, JAX, MATLAB, Git, Docker
Languages:	Spanish (Native), English (Fluent)

PUBLICATIONS

[1] **AI-Boosted Video Annotation: Exploring Pre-Labeling with Cross-Modalities**
Juan Gutiérrez, Ángel Mora Sánchez, Silvia Rodríguez Jiménez, José Luis Blanco. In *Distributed Computing and Artificial Intelligence (DCAI 2024)*, Springer LNCS, 2025.

[2] **Data Integration and Analytics of Cone Crusher Responses**
G. Asbjörnsson, M. Evertsson, P. Plaza, S. Rodríguez-Jiménez, J. Gavilanes, J. Cortón-González, **Juan Gutiérrez**, J. L. Blanco, J. E. Ortiz. In *14th International Comminution Symposium (Comminution '25)*, Cape Town, South Africa, 2025.

[3] **Open-Source System for Multilingual Translation and Cloned Speech Synthesis**
Mateo Cámara, **Juan Gutiérrez**, María Pilar Daza, José Luis Blanco. In *Forum Acusticum / Euronoise 2025*, Málaga, Spain.

[4] **Study for the Development of a Video Annotation Support System Using an Agnostic Image Model**
Juan Gutiérrez. Master's Thesis, Universidad Politécnica de Madrid, 2023. Supervised by José Luis Blanco.

WORK EXPERIENCE

Predoctoral Researcher — Aug 2025 – **Present**
Department Signals, Systems and Radiocommunications, UPM, Madrid, Spain

– Research in self-supervised foundation models and the geometry of feature manifolds for image and video.

– Teaching assitant in signal processing, communications, and programming courses.

– Supervised two M.S and two B.S. theses.

Computer Vision Engineer — Sep 2023 – Aug 2025
Sigma Cognition S.L., Madrid, Spain

– Led architechture design, model prototyping (PyTorch), data-efficient training, and experimental validation in production-like settings.

– Designed and deployed computer-vision solutions for EU and national R&D projects (DEQ, HADA) and industrial contracts (Stellantis, BASF).

Applied Researcher   May 2024 – Aug 2025
FUNDETEL at UPM, Madrid, Spain

– Contributed technical research to public–private initiatives (HADA and DEQ).

Research Scholarship   Jan 2023 – Jul 2023
UPM, Madrid, Spain

– Develop of M.S. Thesis: "Study for the Development of a Video Annotation Support System Using an Agnostic Image Model."

Relevant Projects

HADA. Publications: [1] [4]   Jan 2022 – Aug 2024

Developed efficient cross-modal attention mechanisms for aligning voice, text, and image modalities. Focused on reducing compute overhead during the pre-training phase of multimodal encoders.

DigiEcoQuarry (DEQ). Publications: [2]   Sep 2023 – May 2025

Design and validation of an integrated digital quarry system through multimodal sensing and AI-based decision support. Developed computer-vision models and data-processing algorithms for real-time monitoring across pilot sites.

Industrial R&D (Stellantis & BASF)   Sep 2023 – Aug 2025

Applied computer-vision projects for weld-defect detection and corrosion identification. Focused on robust model prototyping, cross-domain generalization, and deployment in production environments.

Talks

Seminar: Text-Based Video Retrieval through Hierarchical Content Representation   Madrid, Spain (May 2025)
Great Talks @ Teleco, Internal Doctoral Event.

Using Agnostic Models on Image and Text to Support Video Annotation   León, Spain (Jun 2023)
Artificial Intelligence Applications and Innovations (AIAI 2023).