Antonio Almudévar

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RESEARCH EXPERIENCE

Apr 2022-Sep 2026	Ph.D. Student University of Zaragoza, Zaragoza, Spain Supervisor: Alfonso Ortega
Jun 2025-Aug 2025	Visiting Researcher Brno University of Technology, Brno, Czech Republic JSALT Workshop Team: "Towards LLM role-playing agents that stick to their role"
Sep 2024-Feb 2025	Visiting Researcher University of Cambridge, Cambridge, UK Supervisor: José Miguel Hernández-Lobato
Jun 2024-Aug 2024	Visiting Researcher Johns Hopkins University, Baltimore, USA JSALT Workshop Team: "Multimodal Multi-Task Audio-Visual Transformer"
Sep 2023-Dec 2023	Visiting Researcher INRIA, Nancy, France Supervisor: Romain Serizel
Jun 2023-Aug 2023	Visiting Researcher Le Mans Université, Le Mans, France JSALT Workshop Team: "X-Diar: Explainability for Diarization"
Sep 2021-Mar 2022	Research Assistant University of Zaragoza, Zaragoza, Spain
Sep 2020-Jun 2021	Research Intern Aragón Photonics Labs, Zaragoza, Spain Unsupervised Anomaly Detection techniques applied to Optical Sensors

EDUCATION

Apr 2022-Sep 2026	Ph.D. in Information and Communication Technologies University of Zaragoza, Zaragoza, Spain Areas: Representation Learning, Information Theory, Variational Inference
Sep 2020-Jun 2021	M.Sc. in Modeling, Mathematical Research, Statistics and Computing University of Zaragoza, Zaragoza, Spain
Aug 2019-Jan 2020	M.Sc. in Wireless, Photonics and Space Engineering Chalmers University of Technology, Gothenburg, Sweden Exchange Program
Sep 2016-Jun 2020	B.Sc. in Telecommunications Technology and Services Engineering University of Zaragoza, Zaragoza, Spain

SELECTED PUBLICATIONS

2026   **Almudévar, A.**, Ortega, A., "Bridging Functional and Representational Similarity via Usable Information." In: *arXiv preprint arXiv:2601.21568* (2026)

2026   **Almudévar, A.**, Ortega, A., "Representation Unlearning: Forgetting through Information Compression." In: *arXiv preprint arXiv:2601.21564* (2026)

2026   **Almudévar, A.**, Hernández-Lobato, J. M., Ortega, A., "There Was Never a Bottleneck in Concept Bottleneck Models." In: *ICLR*. 2026

2026   **Almudévar, A.**, Ortega, A., "Rethinking Disentanglement for non-Independent Factors of Variation." In: *TMLR* (2026)

2025   **Almudévar, A.**, Hernández-Lobato, J. M., Khurana, S., Marxer, R., Ortega, A., "Aligning Multimodal Representations through an Information Bottleneck." In: *ICML*. 2025

OTHER PUBLICATIONS

2026   Mariotte, T., Lebourdais, M., **Almudévar, A.**, Tahon, M., Ortega, A., Dugué, N., "Sparse Autoencoders Make Audio Foundation Models more Explainable." In: *ICASSP*. 2026

2024   **Almudévar, A.**, Serizel, R., Ortega, A., "Angular Distance Distribution Loss for Audio Classification." In: *DCASE Workshop*. 2024

2024   **Almudévar, A.**, Mariotte, T., Ortega, A., Tahon, M., "Predefined Prototypes for Intra-Class Separation and Disentanglement." In: *Interspeech*. 2024

2024   Lebourdais, M., Mariotte, T., **Almudévar, A.**, Tahon, M., Ortega, A., "Explainable by-design Audio Segmentation through Non-Negative Matrix Factorization and Probing." In: *Interspeech*. 2024

2024   **Almudévar, A.**, Mariotte, T., Ortega, A., Tahon, M., "Unsupervised multiple domain translation through controlled Disentanglement in variational autoencoder." In: *ICASSP*. 2024

2024   Mariotte, T., **Almudévar, A.**, Tahon, M., Ortega, A., "An Explainable Proxy Model for Multilabel Audio Segmentation." In: *ICASSP*. 2024

2023   **Almudévar, A.**, Ortega, A., Vicente, L., Miguel, A., Lleida, E., "Variational Classifier for Unsupervised Anomalous Sound Detection under Domain Generalization." In: *Interspeech*. 2023

2022   **Almudévar, A.**, Ortega, A., Vicente, L., Miguel, A., Lleida, E., "Vision Transformer based Embeddings Extractor for Unsupervised Anomalous Sound Detection under Domain Generalization." In: *DCASE Challenge*. 2022

2022   **Almudévar, A.**, Sevillano, P., Vicente, L., Preciado-Garbayo, J., Ortega, A., "Unsupervised anomaly detection applied to Φ-OTDR." in: *Sensors* 22.17 (2022), p. 6515

TEACHING

2025   Digital Signal Processing
        B.Sc. in Telecommunications Technology and Services Engineering
        University of Zaragoza

2022-2024   Audio and Image Processing
              B.Sc. in Telecommunications Technology and Services Engineering
              University of Zaragoza

SCHOLARSHIPS & AWARDS

2023   Ibercaja-CAI for Research Stays
         Scholarship to partially finance my stay in Centre INRIA de l'Université de Lorraine.

2022   Government of Aragón Pre-doctoral Research Fellowship
         Awarded a competitive 4-year grant covering full salary and tuition for Ph.D. studies.

2020   Mobility City Scholarship
         Scholarship to develop my B.Sc. Thesis in the field of Connected and Autonomous Vehicles
         and Sustainable Mobility.

2019   Santander Erasmus Excellence Scholarship
         Scholarship to finance my stay in Chalmers University of Technology.
         Granted to the Top-2000 academic records in Spain.