

# Antonio Almudévar

University of Zaragoza

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## EXPERIENCE

- Apr 2022-Sep 2026 Ph.D. Student  
University of Zaragoza, Zaragoza, Spain  
Supervisor: Alfonso Ortega
- Jun 2025-Aug 2025 Jelinek Summer Workshop on Speech and Language Technology  
Brno University of Technology, Brno, Czech Republic  
Team: "Play your Part: Towards LLM role-playing agents that stick to their role"
- Sep 2024-Feb 2025 Research Visit  
University of Cambridge, Cambridge, UK  
Supervisor: José Miguel Hernández-Lobato
- Jun 2024-Aug 2024 Jelinek Summer Workshop on Speech and Language Technology  
Johns Hopkins University, Baltimore, USA  
Team: "Multimodal Multi-Task Audio-Visual Transformer"
- Sep 2023-Dec 2023 Research Visit  
INRIA, Nancy, France  
Supervisor: Romain Serizel
- Jun 2023-Aug 2023 Jelinek Summer Workshop on Speech and Language Technology  
Le Mans Université, Le Mans, France  
Team: "X-Diar: Explainability for Diarization"
- Sep 2021-Mar 2022 Research Assistant  
University of Zaragoza, Zaragoza, Spain  
Generative Modeling for Optical Sensors
- Sep 2020-Jun 2021 Research Internship  
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

## PUBLICATIONS

- 2026 Mariotte, T., Lebourdais, M., **Almudévar, A.**, Tahon, M., Ortega, A., Dugué, N., “Sparse Autoencoders Make Audio Foundation Models more Explainable.” In: *arXiv preprint arXiv:2509.24793* (2025)
- 2026 **Almudévar, A.**, Hernández-Lobato, J. M., Ortega, A., “There Was Never a Bottleneck in Concept Bottleneck Models.” In: *arXiv preprint arXiv:2506.04877* (2025)
- 2025 **Almudévar, A.**, Hernández-Lobato, J. M., Khurana, S., Marxer, R., Ortega, A., “Aligning Multimodal Representations through an Information Bottleneck.” In: *ICML*. 2025
- 2025 **Almudévar, A.**, Ortega, A., Vicente, L., Miguel, A., Lleida, E., “Defining and measuring disentanglement for non-independent factors of variation.” In: *arXiv preprint arXiv:2408.07016* (2024)
- 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  $\Phi$ -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.
- 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 España  
Scholarship to partially finance my stay in Chalmers University of Technology.  
Granted to the Top-2000 academic records in Spain.