

ADRIAN CANOVAS RODRIGUEZ

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Research Interests: Deep Learning · Remote Sensing & Precision Agriculture · Federated Learning · LLM Security & Privacy · Environmental AI

Education

- Ph.D. in Computer Engineering**
International Mention

University of Murcia
2024 – Present

 - Thesis: *Knowledge Acquisition through Artificial Intelligence Techniques for Sustainable Environments.*
- M.Sc. in New Technologies in Computer Engineering**
Specialisation in Computing

University of Murcia
2022 – 2024

 - Thesis: *Soil Moisture and Crop Condition Monitoring Based on Satellite Imagery and Deep Learning.*
- B.Sc. in Computer Engineering**
Specialisation in Computing

University of Murcia
2016 – 2021

 - Thesis: *Estimation of Reference Evapotranspiration Using Machine Learning Techniques.*

Professional Experience

- Associate Professor**
University of Murcia (UMU) – Department of Computer Engineering

Murcia, Spain
2024 – Present

 - Teaching undergraduate courses in the Computer Engineering programme.
- Researcher**
University of Murcia (UMU)

Murcia, Spain
March 2025 – Present

 - Design and development of deep learning models for precision agriculture and environmental monitoring.
 - Processing and analysis of large-scale geospatial and remote sensing datasets.
 - Research and implementation of techniques for privacy and security preserving in distributed AI systems.
- Research Assistant**
IMIDA – Murcian Institute of Agricultural Research and Development

Murcia, Spain
November 2023 – March 2025

 - Developed and deployed AI pipelines for crop monitoring, soil analysis, and agronomic decision support.
 - Collaborated with domain experts to translate agronomic requirements into operational machine learning solutions.
- Junior Software Engineer**
TICARUM – Information and Communication Technologies at UMU

Murcia, Spain
June 2021 – November 2023

 - Built and maintained enterprise software systems to automate and streamline university administrative processes.
 - Participated in the full software development lifecycle: requirements analysis, design, implementation, and deployment.

Research Visits & Internships

- Research Intern**
IBM – International Business Machines

Dublin, Ireland
May 2026 – August 2026

 - Researched security and privacy vulnerabilities in large language models (LLMs) within IBM’s AI research division.
 - Investigated adversarial attack vectors, prompt injection, and data leakage risks in deployed LLM-based systems.
 - Contributed to the design of privacy-preserving techniques for LLM fine-tuning and inference in enterprise environments.
- Research Intern**
IMIDA – Murcian Institute of Agricultural Research and Development

Murcia, Spain
September 2020 – June 2021

 - Collected and processed time-series data from meteorological stations across the SIAM and AEMET networks.
 - Built data filtering and preprocessing pipelines for large-scale agricultural and climate datasets.

- Trained and benchmarked machine learning models for evapotranspiration and crop condition estimation.

Research Intern

Murcia, Spain

IMIDA – Murcian Institute of Agricultural Research and Development

September 2018 – March 2019

- Acquired and curated meteorological records from SIAM and AEMET databases.
- Standardised and unified multi-source datasets to ensure consistency for downstream scientific analysis.

Publications

Deep Learning for Soil Moisture Estimation: Fusing Satellite and Meteorological Data 2026

- Cánovas-Rodríguez, A. et al. *arXiv preprint*. [doi:10.48550/arXiv.2606.21475](https://doi.org/10.48550/arXiv.2606.21475)

Attention Mechanisms and Transfer Learning for Robust Peach Leaf Damage Classification 2026

- Cánovas-Rodríguez, A. et al. *arXiv preprint*. [doi:10.48550/arXiv.2606.02045](https://doi.org/10.48550/arXiv.2606.02045)

Chlorophyll-a Mapping and Prediction in the Mar Menor Lagoon via C2RCC-Processed Sentinel-2 Imagery 2026

- Cánovas-Rodríguez, A. et al. *Zenodo*. [doi:10.5281/zenodo.18769187](https://doi.org/10.5281/zenodo.18769187)

Technical Skills

Languages: Python, MATLAB, Java, SQL

ML / DL: PyTorch, TensorFlow, scikit-learn, Hugging Face Transformers

Remote Sensing: Sentinel-2, ESA SNAP, Planet, QGIS, Google Earth Engine

Research areas: AI, Deep Learning, Federated Learning, Computer Vision, LLM Security & Privacy, Geospatial AI

Language Skills

Spanish: Native

English: Professional working proficiency