



Sara Pérez CARABAZA

Technology Centre: Ireland's Centre of Applied AI (CeADAR)
Academic Mentor: Oisín Boydell
Company Partner: ProvEye
Company Mentor: Dr. Jerome O'Connell

Sara has a background in Artificial Intelligence for UAV – or drones – path planning as well as in deep learning for computer vision. In 2019, Sara finished her PhD studies financed by Airbus Group at the University Complutense of Madrid. Her PhD thesis proposes several path planning methods based on metaheuristics for optimizing the routes of a fleet of UAVs for target search missions. Later, she moved to Italy to become a research trainee at the Joint Research Centre of the European Commission, where she applied convolutional neural networks to a crop classification problem using imagery provided from the Sentinel-2 satellites.

Dr. Oisín Boydell

Dr Oisín Boydell is Principal Data Scientist and Head of the Applied Research Group at CeADAR. His primary research interests include deep learning, real-time analytics and blockchain technology. Oisín is also driving the earth observation data initiative within CeADAR, leading a research project with a number of industry partners in exploring uses of earth observation data in conjunction with AI for different industry applications.

Dr. Jerome O'Connell

Dr. Jerome O'Connell is the founder and Managing Director at ProEye (<http://proveye.ie/>) a Company that has just developed novel image processing software for UAV data, which is first to market time series correction. Jerome did his PhD studies in the Department of School of Biosystems Engineering in University College Dublin (UCD). He has over 12 years of experience developing image processing methods for remote sensing, working with a host of commercial Institutes and organisations.

“Monitoring threatened Irish habitats using UAVs and Deep learning techniques”

This project goal is to exploit the recent advances in Machine Learning (ML) and Unmanned Aerial Vehicles (UAVs) to map and monitor threatened habitats in Ireland. The proposed methods will allow for the automated creation of ecological maps. Namely, the research will be focused on the development of habitat mapping models based on deep learning, which is a subset of ML inspired in how information is processed in biological systems. The proposed project will unlock the possibility of automating the mapping of critical habitats in Ireland and enable future research for mapping other critical habitats.

The motivation of this project comes from the increasing need for high-quality habitat maps that allow monitoring of the status of protected habitats. The European environment policy states as a priority objective the protection and conservation of ecosystems. Regular mapping of threatened habitats results in valuable information about the habitat status and is identified as a key step for the conservation of ecosystems. Hence, the European Union requires member states to periodically produce maps for the status assessments of threatened habitats in Europe. This increasing need for high-quality habitat maps has triggered research interest in efficient and methodologies to streamline and automate current habitat monitoring methodologies. This project aims to propose and analyse the power of novel ML-based models for mapping several protected habitats present in Ireland.