

Use Case 3: Signs of Parkinson's Disease in Multimodal Data

By combining retinal imaging with other biomarkers, it aims to develop a non-invasive tool for early Parkinson's disease detection and improved disease management.

Focus disease



Parkinson's Disease (PD) and, potentially, other neurodegenerative disorders.

Data modalities and providers

Clinical data, retinal imaging, neuroimaging, neurophysiological data and biomarkers from UCD and UNIPD.



Scientific approach



Development of a classifier to detect PD using ophthalmic imaging.

Testing different deep learning approaches, including feature extraction and self-supervised learning models.

Exploration of eye biomarkers for early PD prediction (≥ 5 years before diagnosis).

Explore associations between eye and brain biomarkers, and apply federated learning approaches to identify patient subgroups.



Expected Outcomes



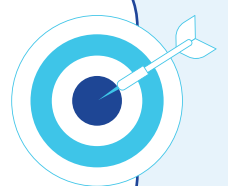
Identification of PD biomarkers in eye images.



Prediction models for early PD detection.



Associations between ophthalmic and neurological biomarkers.



Impacts



Creating new strategies for precision-medicine drug development.



New paradigms for integrating genomics and multimodal data.



Increase public trust about the safety and efficacy of data sharing.