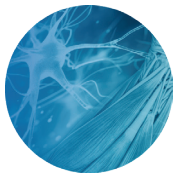


Use Case 1: Neurodegenerative Diseases Phenotyping & Prognosis Evaluation

By integrating diverse data and using advanced machine learning, it seeks to uncover novel mechanisms and biomarkers for ALS, enhancing patient prognosis and treatment strategies.

Focus disease



Amyotrophic Lateral Sclerosis (ALS).

Data modalities and providers

Genetic, clinical, imaging, and laboratory data from ALS patient cohorts (UNITO, UNIPD, Answer ALS data).



Scientific approach



Horizontal federated learning and unsupervised learning methods analyze multimodal data.

Reverse engineering techniques (e.g., Bayesian networks) reconstruct interactions between different factors.

Focus on identifying correlations and dependencies among genetic, clinical, and imaging variables.



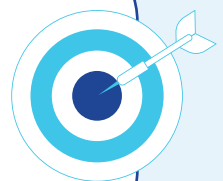
Expected Outcomes



Cluster ALS patients into subgroups with specific genetic variants and phenotypes.



Data-driven patient stratification for clinical trials, improving treatment efficacy.



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.