AIM_MIA - Artificial Intelligence in Medicine: focus on Multi-Input Analysis

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INFN
Istituto Nazionale di Fisica Nucleare
Sezione di PISA

INFN groups

Resp. Nazionale: A. Retico

Resp. Locali:
  Bari (S. Tangaro)
  Bologna (D. Remondini)
  Cagliari (P. Oliva)
  Catania (M. Marrale)
  Ferrara (G. Paternò)
  Firenze (C. Talamonti)
  Lab. Naz. Sud (G. Russo)
  Pavia (A. Lascialfari)
  Pisa (M.E. Fantacci)

The AIM_MIA project will focus on the following scientific open issue related to the development and validation of AI-based tools for medical data analysis:

 1) mining multi-input data.

To make progress in this field it is necessary to address some key aspects such as:

 2) handling incomplete/missing/limited datasets;
 3) developing a dedicated data and IT platform for secure data management and access to adequate computing resources.

To achieve these goals, sharing data and knowledge within a broad scientific community (networking) will be a fundamental ingredient.

AIM_MIA: Workpackages

Four work packages will be devoted to address the scientific issues enumerated above.

In **WP1** advanced AI-based solutions to analyse relevant data regarding the health status of individuals (including demographic information, medical images acquired with different modalities, clinical scores, etc.) will be developed and validated.

WP2 will be focused on the implementation of the technical solutions for data curation, data augmentation, sample balancing etc., in order to extract as much information as possible from the available datasets which in most real-word cases are incomplete, limited or unbalanced. The growing availability of public data repositories will ensure the feasibility of this project.

The data will be organized and shared among the project collaborators via a dedicated data platform to be developed in **WP3**, which will rely on INFN computing resources.

The continuous collaboration with clinical experts, relevant associations in the medical research field, and connections with other research projects funded by INFN or external institutions will be managed in **WP4**, which is dedicated to scientific networking.
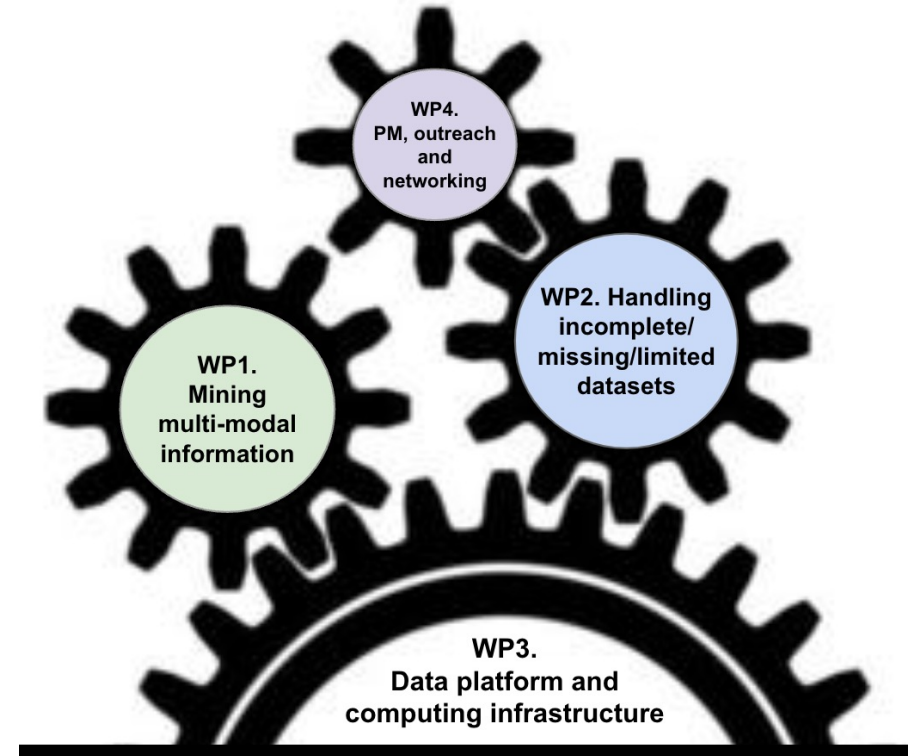
AIM_MIA: Expected Results

Three-year research activity carried out by a research group with deep experience on these topics will certainly lead to a significant advancement in the three strongly connected open issues described above.

In terms of measurable performance indicators, the collaboration is expected to deliver several *scientific publications* in relevant journals (>5 per year).

The data *platform and software repository* will constitute a tangible and reusable result of the project.
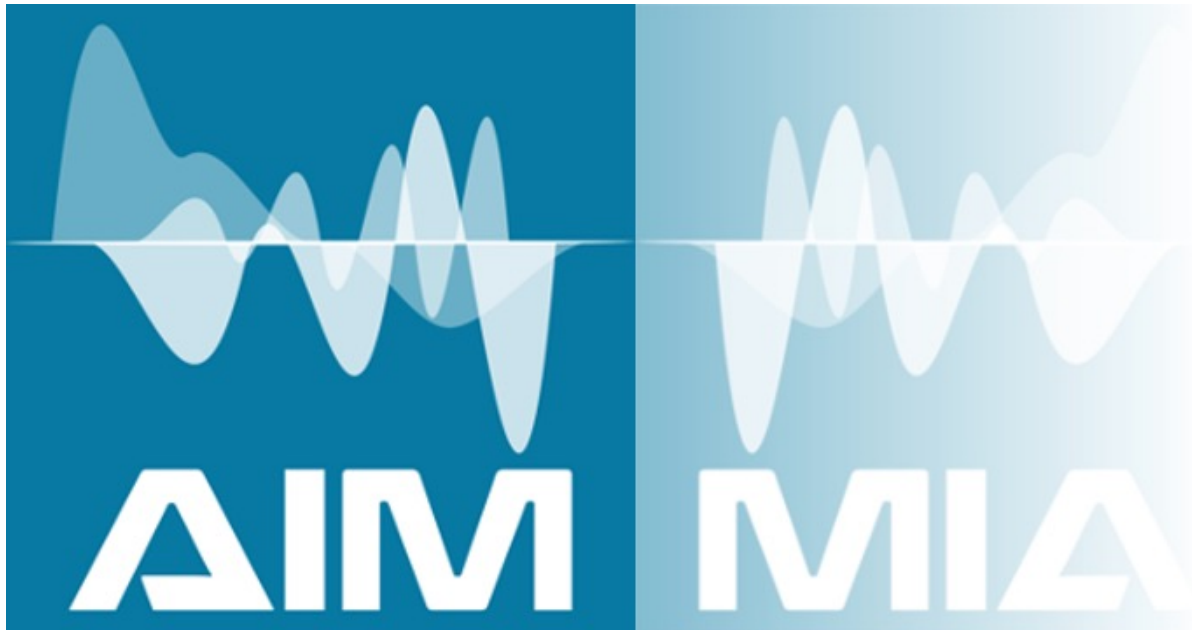
AIM_MIA: LNS activities

The main LNS research activity of this proposal is to develop robust and effective *radiomics analysis pipelines* to make predictions about the health status of an individual, by extracting and combining via *multi-input AI-based tools* the complementary and heterogeneous information provided by *different data sources* (images, diagnostic tests, and phenotypic data).
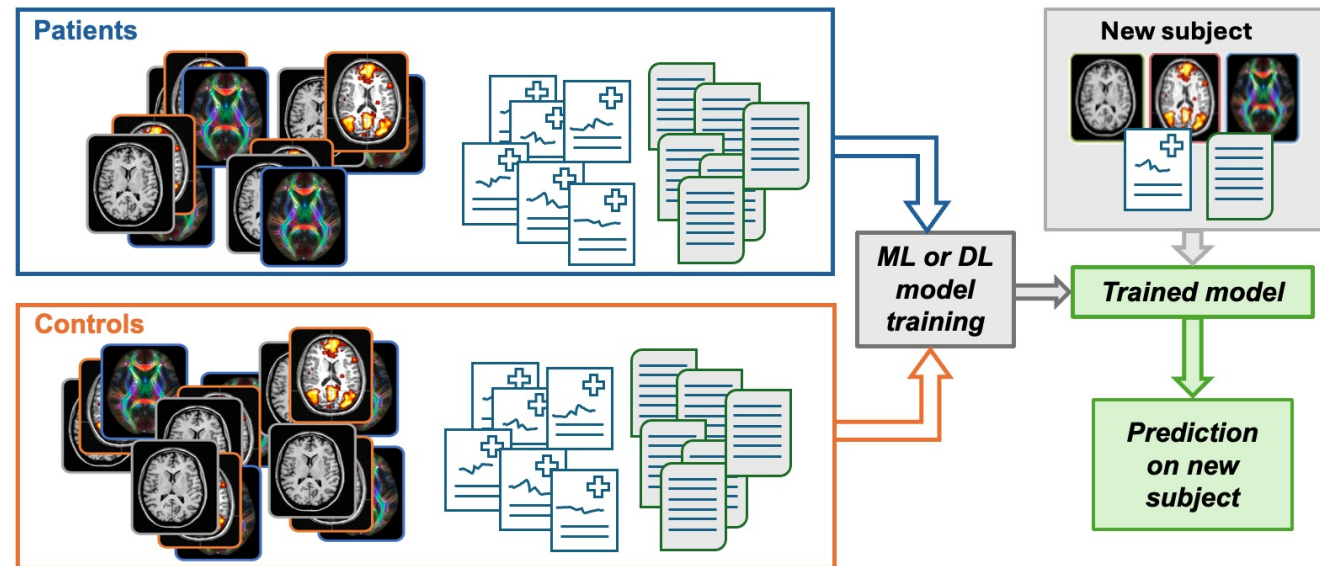
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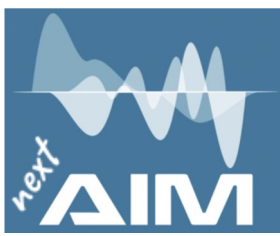
- Alessandro Stefano – 0,5
- Giorgio Russo – 0,5