

Lung diseases pose a significant global health threat, causing severe illness and millions of deaths annually. Currently, there is no digital solution to provide guideline-based recommendations in conjunction with AI-based suggestions for individual patient diagnosis and therapy.

AI4LUNGS will integrate various data processing techniques, such as machine learning, natural language processing, deep learning algorithms, and computational models to analyse data thoroughly.

Project's Impact



Technological

Innovative AI computational disease models for stratifying patients more precisely.



Scientific

Combination of several innovative AI algorithms to process multimodal clinical data with decision support models to assist clinicians (next generation of Computer-aided diagnosis and treatment).



Social-clinic

Integrating powerful technologies for better healthcare and a healthier society.



Societal

Assist clinicians and provide high-quality digital services for all, including small or remote hospitals.



Economic

Improving respiratory care resource allocation in healthcare for sustainability.



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Funded by the European Union

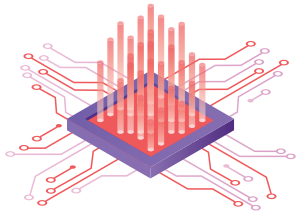
Funded by the European Union under Horizon Europe Programme (Grant Agreement No. 101080756). Views and opinions expressed are however those of the AI4Lungs consortium author(s) only and do not necessarily reflect those of the European Union or the Health And Digital Executive Agency (HaDEA). Neither the European Union nor the granting authority can be held responsible for them.



AI4LUNGS

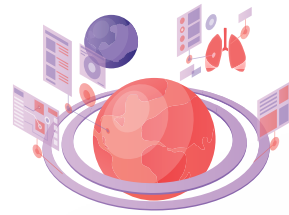
AI-Based Personalised Care for Respiratory Disease using Multi-Modal Data in Patient Stratification

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Two Novel Technologies

AI4LUNGS introduces two novel technologies to the medical field: digital auscultation and early-stage liquid biopsy in the decision support systems, where the second one aims to identify cancer types more efficiently.



Virtual Digital Twin

The project will develop a virtual digital twin to provide an example of the AI4LUNGS platform interface with embedded patient history, current status, performance, and examples of the results achieved by all the models that will be developed in the project.

Ambition

- 1 Design and build a guideline-based decision support system.
- 2 Develop a set of integrated and interpretable computational models.
- 3 Integrate novel data modalities.
- 4 Design, develop and deploy a secure, easy-to-integrate and scalable infrastructure.
- 5 Design a personalised interactive dashboard.
- 6 Create an open-access data repository.
- 7 Demonstrate and validate the AI4LUNGS tools.
- 8 Measure the impact on the clinical pathway's usability.
- 9 Maximize impact and design a sustainable exploitation strategy.
- 10 Analyse and create awareness of AI4LUNGS Ethical, Legal and Social Implications (ELSI).

Supporting physicians in their decision-making during the diagnosis & treatment processes.



Streamlined and digitalised procedures



Reduced the need for numerous examinations



Potentially saved time

Pilot Study



- 1 The AI models that will be developed during the project will be validated using retrospective data collected from five consortium partners.
- 2 AI algorithms' results validation will be done in collaboration with data scientists at the medical centers.
- 3 After the validation of individual algorithms, these will be integrated to work as a single system for further validation with clinicians until the end of the project.
- 4 AI4LUNGS aims to reach the next level and integrate this combination of model and AI-based methods in a single platform and perform a pilot demonstration of the full system.
- 5 To test this in an operational scenario, observational studies will be run in at least two hospitals in two countries using prospective data of patients with lung diseases.