

General Presentation

❖ **Project name : Breathe**

❖ **Describe your project as a tweet (140 symbols) :**

Artificial intelligence improves diagnosing lung diseases in a clinical setting. It helps patients, saves doctors time and cut hospital costs.

❖ **Who are you ?**

Postdoctoral researcher at the University of Leuven & University Hospital Leuven(Belgium). Working last 7 years on applying artificial intelligence for interpretation of pulmonary function tests and further lung disease diagnosis.

My Project

❖ **Project name :** Breathe

❖ **The issue raised :**

500 million people suffer from the respiratory diseases worldwide. Pulmonary function tests (PFT) are central tool to assess these diseases, however they are prone to the manual interpretation. Interpretation is time consuming, expert depended, highly variable and not specific enough to reach final diagnosis.

❖ **My solution :**

Breathe developed an Artificial Intelligence-based software to help doctors save their time and improve accuracy when interpreting lung function tests and diagnosing lung diseases.



My Project

❖ More details:

Pulmonary function testing (PFT) is a standard and essential tool for the diagnostics, functional evaluation and follow-up of respiratory diseases. Complete PFT is composed of different measurements which all provide unique information that narrows the differential diagnosis and helps in the characterization of a specific respiratory disease.

The use of PFT is primarily based on expert opinion and international disease guidelines. The problem with its interpretation is: 1/ expert dependent, 2/ highly variable, 3/ time-consuming, and 4/ not specific for diagnosis.

The solution is:

1. developing a software package for the reliable automated clinical interpretation of PFT.
2. empowering software with the artificial intelligence that integrates clinical information with PFT parameters
3. incorporating a cloud-based solution into real-life setting to further improve accuracy & reliability.

Software is already internally validated in largest Belgian hospital, where it showed high accuracy of 76% when detecting different lung diseases. Additionally, AI-based software showed superiority when directly compared with the suggested diagnosis of panel of experts. [<http://www.europeanlung.org/en/news-and-events/media-centre/press-releases/artificial-intelligence-improves-doctors%E2%80%99-ability-to-correctly-interpret-tests-and-diagnose-lung-disease>]

Developed system can cut costs: redundant expensive tests not needed, decrease of man-hours for interpretation and establishment of the diagnosis. Besides being more efficient for the healthcare institutions, it is beneficial to patients by securing on-time treatment and effective therapy.

Growth expectation

❖ Resources needed during RespirH@ction :

Everyone is welcomed to join. Project would benefit the most if we have the right people in the team. I suggest we have someone with the medical background (pulmonologists. health professional, etc.), also someone with the engineering and data science background to work on detailed feasibility of the project.e

❖ Tell us about the future of your project (6 months, 1 year...)?

The future is bright. In the same way we have today automated interpretations of ECGs or sleep monitoring, automated interpretations of pulmonary function tests is logical step forward. That said, in the future Breathe will be used Worldwide in most of the clinics. In 6 months, we should already have a working prototype set in the few partner hospitals.