Fraunhofer
PORTUGAL

TRANSPARENT ARTIFICIAL MEDICAL INTELLIGENCE

TAMI

Consortium

First Solutions (Leader), Fraunhofer AICOS, INESC TEC, ARS Norte and Carnegie Mellon University.

Partners

Hospital Prof. Dr. Fernando Fonseca; Instituto Português de Oncologia do Porto (IPO-Porto); Centro Hospitalar do Porto.
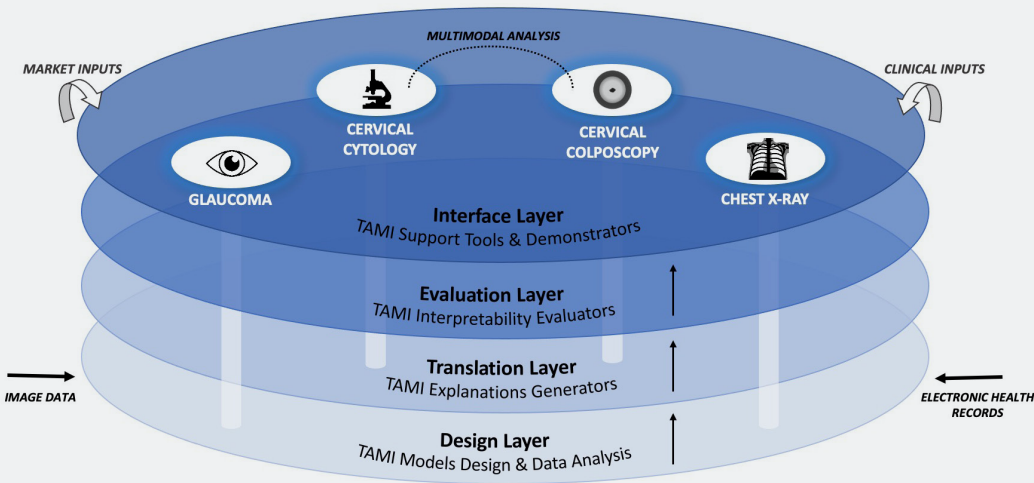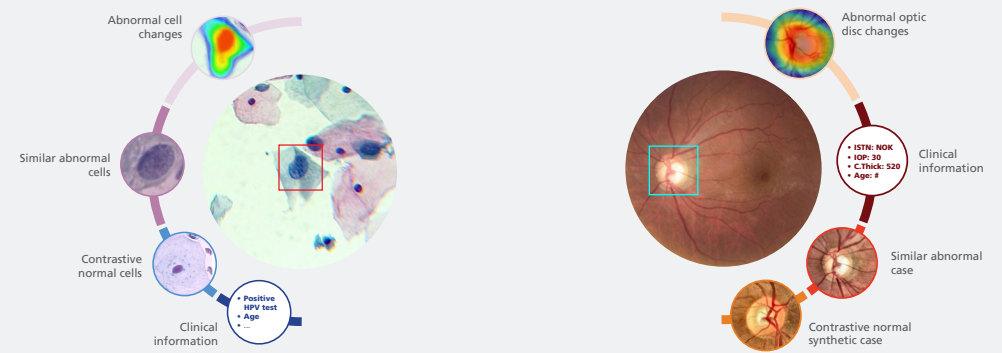
HIGH-PERFORMING XAI SYSTEMS FOR APPLICATION IN MEDICINE

Motivation

The current rise of Artificial Intelligence (AI) has brought exciting advances in a wide range of applications, greatly boosted by the availability of large and diverse datasets, improved algorithms, and new levels of computing power. But despite the spectacular successes, there are still huge challenges. The internal logic and inner workings of many state-of-the-art AI models are hidden to the user, which prevents humans from being able to verify, interpret, and understand the reasoning of the system and how particular decisions are made. These crucial needs and concerns are currently one of the main obstacles for wider AI usage, being responsible for the emergence in recent years of the Explainable Artificial Intelligence (XAI), a field of study that aims to make a shift towards a more transparent and interpretable AI.

Solution

TAMI envisions to build high-performing XAI systems for application in medicine, whose workings and outputs can be understood and cross-examined by users through human-friendly explanations of the automated results. Our research will be focused on the following topics:

- Generate self-explanatory AI-based decisions that minimize bias, act ethically in their context and enhance trust of the end-users

- Customizable multimodal and privacy-preserving explanations, that adapt to who will consume them

- Quantitative methods to objectively evaluate and compare the suitability of different types of explanations for specific use cases

- Foster new strategies for presenting human understandable explanations

Furthermore, the project aims to create a new XAI-based platform for healthcare actors in four main imagiological domains: Cervical Cytology, Cervical Colposcopy, Glaucoma and Chest X-Rays. The TAMI platform will be available for commercial, scientific and academic use, and will provide „consumers" access to self-explanatory AI decisions for target screening and diagnosis procedures, as well as access to filtered and anonymized datasets for research purposes.

TAMI