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INCISIVE: A multimodal AI-based toolbox and an interoperable health imaging repository for the empowerment

Description

The increasing amount and availability of collected data (cancer imaging) and the development of novel technological tools based on Artificial Intelligence (AI) and Machine Learning (ML), provide unprecedented opportunities for better cancer detection and classification, image optimization, radiation reduction, and clinical workflow enhancement. The 42-month INCISIVE project aims to address three major open challenges in order to explore the full potential of AI solutions in cancer imaging:

1. AI challenges unique to medical imaging
2. Image labelling and annotation
3. Data availability and sharing

To do so, INCISIVE plans to develop and validate:

1. an AI-based toolbox that enhances the accuracy, specificity, sensitivity, interpretability and cost-effectiveness of existing cancer imaging methods
2. an automated-ML based annotation mechanism to rapidly produce training data for machine learning research
3. a pan-European repository federated repository of medical images, that will enable the secure donation and sharing of data in compliance with ethical, legal and privacy demands, increasing accessibility to datasets and enabling experimentation of AIbased solutions

The INCISIVE models and analytics will utilize various cancer imaging scans, biological data and EHRs, and will be trained with 1 PB of available data provided by 8 partners within the project. INCISIVE solution will be investigated in three validation studies for Lung, Breast and Colorectal Cancer, taking place in 8 sites, from 5 countries (Cyprus, Greece, Italy, Serbia and Spain), with participation of at least 2000 patients and a total duration of 1.5 years. INCISIVE moves beyond the state of the art by improving sensitivity and specificity of lower cost scanning methods, accurately predicting tumor spread, evolution and relapse, enhancing the interpretability of results and democratizing imaging data.

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