

3*-year Research Grant at the “Nello Carrara” Institute of Applied Physics – National Research Council

(starting 1 March 2021)

Analysis of clinical images and data with machine and deep learning techniques

About us:

The research activities will be supervised by Dr./Prof. Andrea Barucci, Researcher at the “Nello Carrara” Institute of Applied Physics – National Research Council (<http://www.ifac.cnr.it/index.php?lang=en>).

Andrea Barucci is an expert in the application of Artificial Intelligence techniques in medical physics, especially for images analysis. His research focuses on 1) Radiomics - clinical imaging data analysis using machine and deep learning, especially using quantitative modalities such as MRI and CT; 2) machine learning and deep learning applications in photonics and biosensing; 3) Ethical and Legal aspects of the development and use of Artificial Intelligence in Health and Well-Being.

Andrea Barucci is part of multidisciplinary team composed of physicists and medical physicists, engineers, computer scientists, data scientists, statisticians, physicians, radiologists, radiotherapists, oncologists, biologists, biochemists and material scientists.

About the project:

The research activity will focus on the analysis of data from the projects, in particular in the analysis of clinical images (mainly magnetic resonance and CT) with machine learning, deep learning and statistical techniques.

The activity will be aimed at the development of Artificial Intelligence models for the determination of biomarkers, and their statistical validation. Information (features / attributes) will be extracted from the images with radiomics (and deep learning) techniques, statistically correlating them with the available clinical data (survival, biopsy data, clinical data, genetics, etc.).

The research work is part of 2 projects aimed at analyzing clinical images and data from cancer patients (NAVIGATOR - Bando Salute Regione Toscana; ProCancer-I EU H2020).

* The contract is renewable annually up to 3 years.

Projects

Navigator (An Imaging Biobank to Precisely Prevent and Predict cancer, and facilitate the Participation of oncologic patients to Diagnosis and Treatment).

ProCancer-I (An AI Platform integrating imaging data and models, supporting precision care through prostate cancer's continuum);

About you:

You will contribute in developing and evaluating novel machine and deep learning methods for images and clinical data analysis; programming in Python (and/or R) to produce scalable, reusable code and releasing publicly available software packages; writing manuscripts, papers, and progress reports about your research, working in a team of multidisciplinary researchers. You will find this project to be a good fit if you are excited to work with challenging artificial intelligence applications in medicine.

Requirements: a Master's Degree in one of the following areas is required: Biology; Statistics; Computer Science; Engineering; Physics; Mathematics.

Desired qualifications: Computational expertise and some knowledge of artificial intelligence (machine learning and deep learning) and statistical data analysis are preferred, especially if related to clinical medicine and images analysis.

Interested?

Please, see details on the position at the following link:

https://bandi.urp.cnr.it/doc-assegni/documentazione/10539_DOC_IT.pdf

or contact Andrea Barucci: a.barucci@ifac.cnr.it

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