Type d'offre : Laboratory offer

Post date : 04.12.24

IBISC Laboratory (Évry Univ.)

M2 internship offer I Semi-supervised classification with convolutional graph networks. Application to heart attack risk prediction

Informations générales

Contract type : Stage

Contract length : 3 or 6 months

Education level : Engineering school / Master 2

Contact :

Hichem Maaref / **Aurélien Hazan**

Starting date : Mon 17/02/2025 - 12:00

Trade : Technicien

Topic : Analyse et traitement d'images

IBISC Laboratory (Évry Univ.) :

The IBISC Laboratory (Informatique, Bioinformatique, Systèmes Complexes EA 4526) is a laboratory of the University of Evry Paris-Saclay, structured into four research teams: AROBAS, COSMO, IRA2 and SIAM. A particular feature of the laboratory is its multi-disciplinary research and its location on two university sites: IBGBI and PELVOUX. This specificity is also reinforced by its attachment to two distinct scientific departments: Sciences Fondamentales et Applications (SFA) and Science et Technologie (ST). The IBISC laboratory is resolutely developing a strategy of collaboration and valorization of research with industry, as well as a research strategy open to the international arena. In 2023, the IBISC laboratory welcomed 23% of the UEVE's teaching and research staff, who hold a number of responsibilities at both the University of Evry (LMD, UFRs, IUT, VPs) and the University of Paris-Saclay (Graduate schools in Computer Science and Digital Sciences (ISN) and Engineering and Systems Sciences (SIS)).

Détail de l'offre (poste, mission, profil) :

Context

Myocardial perfusion scanning (or myocardial perfusion scintigraphy) is a non-invasive nuclear medicine imaging test that uses a small amount of a radioactive tracer (usually technetium-99m (99mTc)) to detect any difference in blood flow in the heart muscle at rest and during exercise. It is widely used to assess the extent of damage to the heart, detect stenoses in the myocardium of patients with chest pain in order to search for myocardial ischemia or small atypical symptoms, etc. The HAS2 recognizes the following indications for myocardial perfusion scintigraphy:

- Chest pain of intermediate risk for coronary origin (low risk⇒ coroscanner, high risk ⇒ more or less interventional coronary angiography);

- Viability of an infarcted myocardial territory. Screening for stenosis after stenting (also known as intra-stent stenosis);

- Screening for myocardial ischemia in asymptomatic patients with cardiovascular risk factors (hypertension, diabetes, smoking, dyslipidemia, etc.).

Objectives

One of the general objectives is to optimize the tracer and radiation doses received, in order to obtain images of sufficient quality to support the diagnosis, while exposing the patient to the lowest possible radiation doses, in the interests of patient radiation protection. The study carried out will enable us to propose simple, easily measurable criteria for optimizing the dose of tracer to be injected prior to scintigraphy or CT scanning.

Profile and skills required

The person recruited should have an engineering degree or a Master's degree, and a sound knowledge of artificial intelligence, such as deep learning (DL), deep neural networks and coding (Python, Cuda, C++). Experience of development on graphics processors (GPU) will be highly appreciated. Fluent English. The successful candidate will have the opportunity to work in an interdisciplinary team and with a consortium of data scientists and clinicians from the Centre Hospitalier Sud-Francilien (CHSF).

Planned collaborations

In order to validate our approach on a large database representative of practices in the nuclear medicine department, this study will be based on the CHSF database. This database contains a large number of cases accumulated over several years, presenting cardiac disorders and typologies characteristic of cardiovascular pathologies. Collecting and formatting the data represents a major part of the project, which will be carried out in collaboration with the IBISC laboratory at the Université Paris-Saclay. Publications will mention this hospital-university collaboration.

URL de l'offre :

https://www.dataia.eu/sites/default/files/stageESSI2024v2_0.pdf

Lien vers l'offre sur le site dataia.eu :https://da-cor-dev.peppercube.org/node/1176