



## Thesis Project Form

**Title (tentative):** Multimodal Correlation of radiomics feature: [18 F] F DOPA PET/CT and d-ADC in paediatric low grade and high-grade gliomas

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### Description

#### Motivation and application domain

Neuro-oncology patients undergo many imaging studies: from conventional MRI to advanced MRI modalities, PET imaging and CT. In this work, we aim to integrate [18F] F-DOPA PET/CT imaging data of paediatric gliomas with diffusion-weighted MRI (DWI). PET imaging conveys the metabolic behaviour of the tumour, while DWI describes how the diffusivity of water molecules is disturbed in the presence of the neoplasm. Integrating information from different imaging modalities can improve personalised medicine and provide new insights into understanding gliomas.

#### General objectives and main activities

The student will analyse PET/CT and MRI data of paediatric gliomas to define an automatic tool for extracting valuable metrics to describe the pathology under study. Furthermore, the student will apply radiomic analysis to extract new features from each modality and will investigate the correlation within modality and the correlation of the extracted features with the outcome of the pathology, i.e. the grade of the neoplasms.

#### Training Objectives (technical/analytical tools, experimental methodologies)

The student will learn how to handle multimodal imaging data, i.e. static and dynamic [18F] F-DOPA PET, Magnetic Resonance Imaging (MRI) and Computed Tomography (CT). She/he will use Python for coding.

**Place(s) where the thesis work will be carried out:** Neuroengineering Lab and Galliera Hospital

### Additional information

**Curriculum:** Coding skills

**Maximum number of students:** 1