We are currently looking for a postdoctoral researcher to work on :

A synthetic vascular tree model for intracranial aneurysms detection applied to various imaging modalities (MRA-TOF, 3DRA, CTA).

Project context :

As part of various collaborations between Nantes University Hospital (neuroradiology department) and the Institut du Thorax (ITX, UMR 1087), we are studying the cerebral vascular tree. More specifically, we are proposing automated tools to characterize cerebral arteries, classify arterial bifurcations, and detect intracranial aneurysms using deep learning approaches on MRA-TOF acquisitions.

Within the University of Nantes, we are therefore looking for a young researcher (PhD required) who would be interested in a postdoctoral position (12 months, with the possibility of extension) in the field of medical imaging and artificial intelligence.

Job description :

The project focuses on the creation of synthetic vascular models specifically designed for 3D medical imaging (MRA-TOF, CTA, or 3DRA) in the field of neuroradiology. The main objective of these synthetic models will be to improve the performance of neural networks in the automatic detection of intracranial aneurysms.

The postdoctoral researcher will be employed by the Nantes University Hospital Center for a period of 12 months, within the ITX laboratory. She/he will use an existing set of synthetic vascular models (designed specifically for MRA-TOF) as a starting point and will propose versions more specifically adapted to CTA and 3DRA acquisitions. The synthetic models will ultimately be used to train deep neural networks.

The postdoctoral researcher will therefore work jointly on convolutional neural networks and the synthetic vascular model (involving signal/image processing and mathematical morphology).

A substantial image dataset is available: 2,000 Time-of-Flight MR Angiography (MRA-ToF) acquired from more than 60 university hospitals, 1,000 3D Rotational Angiography (3DRA), and hundreds of Computed Tomography Angiography (CTA).

Qualifications :

A PhD degree in computer science, artificial intelligence, image processing or applied mathematics is mandatory.

Prior experience with Deep Learning and image/signal processing is required.

Good oral and written English skills expected.

Strong programming skills are required (Python mandatory, C/C++ would be appreciated)

Application :

Candidates should send a cover letter along with an extended curriculum vitae to Florent Autrusseau (Florent.Autrusseau@univ-nantes.fr)

Expected starting date : between June and September 2026.