



Imaging Data Engineer position

BACKGROUND The Lausanne University Hospital (CHUV) is one of five Swiss university hospitals. Through its collaboration with the Faculty of Biology and Medicine of the University of Lausanne and the EPFL, CHUV plays a leading role in the areas of medical care, medical research and training.

The Radiology Department has a strong research focus, with several groups dedicated to advancing magnetic resonance imaging (MRI) acquisition, improving image processing and machine learning for radiology, as well as radiologists that are very active in clinical research. The department is also part of the Center for Biomedical Imaging, a joint undertaking of the EPFL, University of Geneva, University of Lausanne, and Geneva University Hospital, and enjoys regular collaborations with these institutions.

The *CHUV-Lundin Brain Tumor Database* project, funded by the Lundin Family Center for Brain Tumor Research, aims at **building a comprehensive brain tumor database, comprising clinical data, imaging data, and omics data**. With a target size of several thousand patients, and a commitment to open science from the beginning, this ambitious project aims at supporting data-driven research in brain cancer. The project will be led in close collaboration between experts in oncology, radio-oncology, radiotherapy, oncological biomarkers, precision oncology, clinical data science, and machine learning for biomedical data at the Lausanne University Hospital and University of Lausanne.

PROJECT DESCRIPTION The overarching goal is to **develop the data science infrastructure necessary for large-scale, automated medical image processing in brain cancer imaging**.

Tasks include

- Develop image selection and depersonalization tools and pipelines based on metadata
- Develop and integrate ETL workflows and ensure correct data formats
- Integrate and develop image segmentation tools and pipelines
- Integrate and develop tools for semantic data annotation and metadata management
- Specify, configure and operate the storage and computing environment
- Develop, integrate and automate image analysis tools and services, including integration with the CHUV-Lundin database.
- Prepare the deployment of tools in the form of containers.
- Optimize data processing, including performance, scaling, traceability, reproducibility.
- Use good development practices, including version control, unit tests, integration tests
- Develop and maintain documentation for pipelines and tools, including data dictionaries and standard procedures

This imaging data engineer will be affiliated to the Lundin Family Brain Cancer Research Center at CHUV, and the position is located within the Translational Machine Learning Laboratory, part of the Department of Medical Radiology. To facilitate cross-department collaboration, the imaging data engineer will also be embedded in the data science team of the CHUV's IT department (DSI) and spend ½ day to a full day in that team every week.

CANDIDATE PROFILE



- MSc or PhD in computer science, electrical engineering, biomedical engineering, applied mathematics, statistics, or related field
- Demonstrated previous experience in medical imaging
- Demonstrated previous experience in data processing, DataOps, big data pipelines (e.g. nextflow)
- Demonstrated previous experience in database design and operations
- Very good knowledge of Python 3.10+, including relevant data science libraries such as pandas/polars.
- Demonstrated previous experience in software development, including object-oriented programming, architecture, documentation, testing, CI/CD, and deployment.
- Knowledge of ML libraries such as scikit-learn and Pytorch are an asset
- English proficiency necessary, French knowledge an asset

Experience in medical imaging, image processing, computer vision are a strong advantage.

As part of the Translational Machine Learning Laboratory, you will join a team of engineers with backgrounds in bioengineering, life sciences, and mathematics, as well as neuroscientists, and interactions with medical professionals will be very frequent. Thus, the work environment and the project require strong communication ability and professionalism. Excellent inter-personal skills are as important as technical skills.

Our team has a strong gender equity focus and we encourage women to apply to this position.

WE OFFER Competitive salary with regular progression, high social benefits, three days of training per year, 25 working days of vacation per year.

CONTACT AND APPLICATION Send your informal inquiries to jonas.richiardi@chuv.ch. If you are at MIDL 2024 we can meet in person.