The Vall d'Hebron Research Institute (VHIR) is a public sector institution that promotes and develops the research, innovation and biosanitary teaching of the Vall d'Hebron University Hospital. Through the excellence of our research, we identify and apply new solutions to the health problems of society and we contribute to spread them around the world.

In April 2015, the **Vall d'Hebron Research Institute (VHIR)** obtained the recognition of the European Commission **HR Excellence.**
This recognition proves that VHIR endorses the general principles of **the European Charter for Researchers and a Code of Conduct for the Recruitment of Researchers (Charter & Code)**.
Thus, there are no restrictions of gender, national origin, race, religion, sexual orientation or age and **candidates with disabilities are strongly encouraged to apply.**

PhD Researcher

Clinical Neuroimmunology and Neuroradiology Research Groups

VHIR offers vacancy/vacant position for a PhD candidate Position in deep learning applied to multiple sclerosis MRI data within the Clinical Neuroimmunology (Neurosciences) Research group to develop new deep learning methodologies for application to multiple sclerosis.

This project should be understood within the context of a larger project entitled 'Geomorphometric analysis of brain and cord damage in multiple sclerosis to predict disease progression', funded by La Caixa. In this larger project, several approaches to predict disease progression accounting for the spatial and shape characteristics of the CNS damage observed in multiple sclerosis will be explored. One of these approaches is based on the exploitation of deep learning techniques, which is the main theme of this PhD project.

Main goals of this PhD project

The main goals of this project are i) to predict disease progression in multiple sclerosis, through deep learning approaches, using anatomical images acquired in clinical practice and ii) to understand which spatiotemporal features of the CNS damage, extracted through a deep learning approach, imply a greater risk of disease progression.

Specific objectives

- To build networks able to predict different types of long-term clinical outcomes, using anatomical brain images as input data
- To extract, for each outcome class (e.g. disabled and non-disabled), class-wise saliency maps which inform about the most relevant features of the input images for disease course prediction
- To quantitatively compare the class-wise saliency maps for each one of the clinical outcomes, through geostatistics or other methods, to help understand the pathological mechanisms underlying a worse prognosis.

More information about our group can be found here.

JOB DESCRIPTION

Education and qualifications:

Required:

- Degree in Telecommunications/Biomedical/Computer/Electrical Engineering, Computer Science, Physics or Mathematics
- Good communication skills
- Excellent grades in the Degree/Master

Experience and knowledge:

Required:

- Advanced python programming and Unix shell scripting skills
- Experience in deep learning analysis (design, training and deployment of deep networks)
- Experience in research
- Proficiency in English

Desired:

- Experience in neuroimaging research
- Good understanding of Magnetic Resonance Imaging
- Experience in writing scientific papers
- Knowledge of multiple sclerosis

Main responsibilities and duties:

- Reach the scientific objectives agreed
- Attend the Multiple Sclerosis Centre of Catalonia (Cemcat)/Section of Neuroradiology (IDI) at the Vall d'Hebron University Hospital at least four days per week (except extraordinary and justified circumstances) to carry out the analyses
- Discuss on a weekly basis the progress of the project with the PhD supervisor(s)
- Write conference abstracts and scientific papers related to their research
- Comply with the General Data Protection Regulation (GDPR). This implies that the imaging and/or clinical data used for this PhD project must not leave Cemcat/IDI at the Vall d'Hebron University Hospital. Any violation of GDPR may imply expulsion from the PhD project and may have legal implications
- Comply with all the laws, rules and regulations of the VHIR
- Comply with the policy of 'zero tolerance' to any kind of abuse that Cemcat/IDI/VHIR have
-

Labour conditions:

- Full-time position
- Duration of the post: 3 years
- Starting date: 15/01/2021
- Annual gross salary: €16,500 (approx.)

- Once the candidate has passed the interview, they will have to be registered at the university to obtain the PhD title in order to accept the post

What can we offer?

- Skillful and social colleagues in a dynamic environment.
- Challenging tasks and a wide range of responsibilities.
- Personal training opportunities.
- Flexible working hours.
- 23 days of holidays + 9 personal days.
- Flexible Remuneration Program (including dining checks, health insurance, transportation and more).
- Annual teambuilding events.

How to apply:

Applicants should submit a full Curriculum Vitae and a cover letter with the candidate's CV to the following email addresses: ctur@cem-cat.org , (seleccio@vhir.org) and (recursos.humans@cem-cat.org).

Vall d'Hebron
Institut de Recerca
VHIR