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How do you know?

30/03/2020

The HARMONY consortium is recruiting a post-doc fellow with expertise in machine learning and image processing

Where to apply

Application Deadline: 31/03/2021 16:00 - Europe/Brussels

Contact Details

Where to send your application.

COMPANY
INSERM

E-MAIL
mathieu.hatt@inserm.fr

Hiring/Funding Organisation/Institute

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ORGANISATION/COMPANY
INSERM

COUNTRY
France

DEPARTMENT
LaTIM - Team ACTION

CITY
Brest

ORGANISATION TYPE
Research Laboratory

POSTAL CODE
29238

WEBSITE
http://www.univ-brest.fr/ibsam/menu/Les+%C3%A9quipes

STREET
22 rue Camille Desmoulins

E-MAIL
hatt@univ-brest.fr

ORGANISATION/COMPANY
INSERM

LOCATION
France › Nantes, Tours

RESEARCH FIELD
Computer science
Engineering
Medical sciences › Medicine

TYPE OF CONTRACT
Temporary

JOB STATUS
Full-time

RESEARCHER PROFILE
Recognised Researcher (R2)
Established Researcher (R3)

HOURS PER WEEK
35

APPLICATION DEADLINE
31/03/2021 16:00 - Europe/Brussels

OFFER STARTING DATE
01/04/2021

OFFER DESCRIPTION

The project

Radiomics denotes the high throughput extraction of numerous quantitative metrics (including shape, intensity or textural features) of medical images with the goal of providing a full

macroscopic phenotyping of tissues (tumors, organs, etc.) that could reflect at least in part the underlying pathophysiological processes (such as necrosis, proliferation, etc.), down to the genomic level [1]. Radiomics has shown promising results in identifying tumor subtypes, aggressiveness as well as in predicting response to therapy and outcome of patients in several cancers [2], however, most of these results have been obtained small, retrospective and monocentric cohorts. On the one hand, standardization was identified early on as a major limitation preventing radiomics to enter clinical practice, because of the lack of comparability of the results. No meta-analysis could be carried out, because each research group relied on different methodological workflows, software, nomenclature and implementation choices, and did not provide sufficient details for their work to be reproduced [3]. These issues have been addressed by the Imaging Biomarker Standardization Initiative (IBSI) [4]. On the other hand, it has been shown for PET [5]–[7], CT [8], [9] and MRI [10], [11] that most radiomic features exhibit moderate to high sensitivity to variability in scanner models, acquisition protocols and reconstruction settings, which constitutes the biggest challenge for multicentric studies [12].

Objectives

Our long term goal is to achieve societal impact by improving patients management. This will be achieved thanks to more robust and accurate predictive models that will help identify patients at risk before initiating treatment. In order for these tools to be exploited in the clinical routine a high level of proof is necessary, which in turn requires larger scale, multicentric (ideally prospective) studies regarding the use of radiomics and/or deep learning techniques relying on multimodal medical images, which are currently lacking. Our objectives are thus to develop harmonization techniques in both image and feature domains in order to improve, facilitate or even render feasible otherwise impossible radiomic analyses of large, multicentric, heterogeneous cohorts. In the present project, we aim at validating these methods in several applications across the consortium.

The consortium

Four teams from the West of France will be working together to address that challenge and to validate the methodological developments across six different multicentric datasets and clinical contexts.

The four teams in the consortium have extensive and complementary expertise in radiomics, medical imaging and image processing/analysis, cancer applications, machine/deep learning and statistics.

Access to a high performance computing platform (PLACIS, http://placis.univ-brest.fr/english) which is a hybrid cluster with 800 CPU cores and 50 GPUs dedicated to calculations, with a 150 TB storage facility, will be granted to all participants in the project.

Recruitment

The consortium is recruiting 1 post-doc fellow. The candidate must hold a PhD with expertise in image processing and/or machine learning techniques for imaging applications (computer vision, medical imaging, etc.). Previous experience in radiomics, deep learning and/or medical image analysis and cancer applications is a plus but is not a requisite. The position will be filled for a bit less than 2 years. The recruited post-doc fellow will work in two different laboratories of the network (Tours and Nantes) on different datasets and clinical applications, and will also collaborate with the other post-doc already recruited, who will work mostly in the laboratories of Brest and Angers.

Applications containing a CV and a letter of motivation, should be sent to mathieu.hatt@inserm.fr

Candidates that have not yet defended their PhD thesis will be considered as long as they have a defense date already scheduled.

References

[1] E. Segal, C. B. Sirlin, C. Ooi, A. S. Adler, J. Gollub, X. Chen, B. K. Chan, G. R. Matcuk, C. T. Barry, H. Y. Chang, and M. D. Kuo, "Decoding global gene expression programs in liver cancer by noninvasive imaging," Nat Biotechnol, vol. 25, no. 6, pp. 675–80, Jun. 2007.

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[6] J. Yan, J. L. Chu-Shern, H. Y. Loi, L. K. Khor, A. K. Sinha, S. T. Quek, I. W. K. Tham, and D. Townsend, "Impact of Image Reconstruction Settings on Texture Features in 18F-FDG PET," J Nucl Med, vol. 56, no. 11, pp. 1667–1673, Nov. 2015.

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More Information

ADDITIONAL INFORMATION

Eligibility criteria

Candidates that have not yet defended their PhD thesis will be considered as long as they have a defense date already scheduled.

Selection process

Applications will be ranked and selected for interviews with all four P.I. of the consortium.
The interviews will be carried out through visioconference.
REQUIREMENTS

Offer Requirements

REQUIRED EDUCATION LEVEL
Computer science: PhD or equivalent
Engineering: PhD or equivalent
Medical sciences: PhD or equivalent

REQUIRED LANGUAGES
ENGLISH: Excellent

Skills/Qualifications

The candidate must hold a PhD with expertise in machine learning and image processing for imaging applications (computer vision, medical imaging, etc.). Previous experience in radiomics, deep learning and/or medical image analysis and cancer applications is a plus but not a requisite. The position will be filled for approximately a bit less than 2 years.
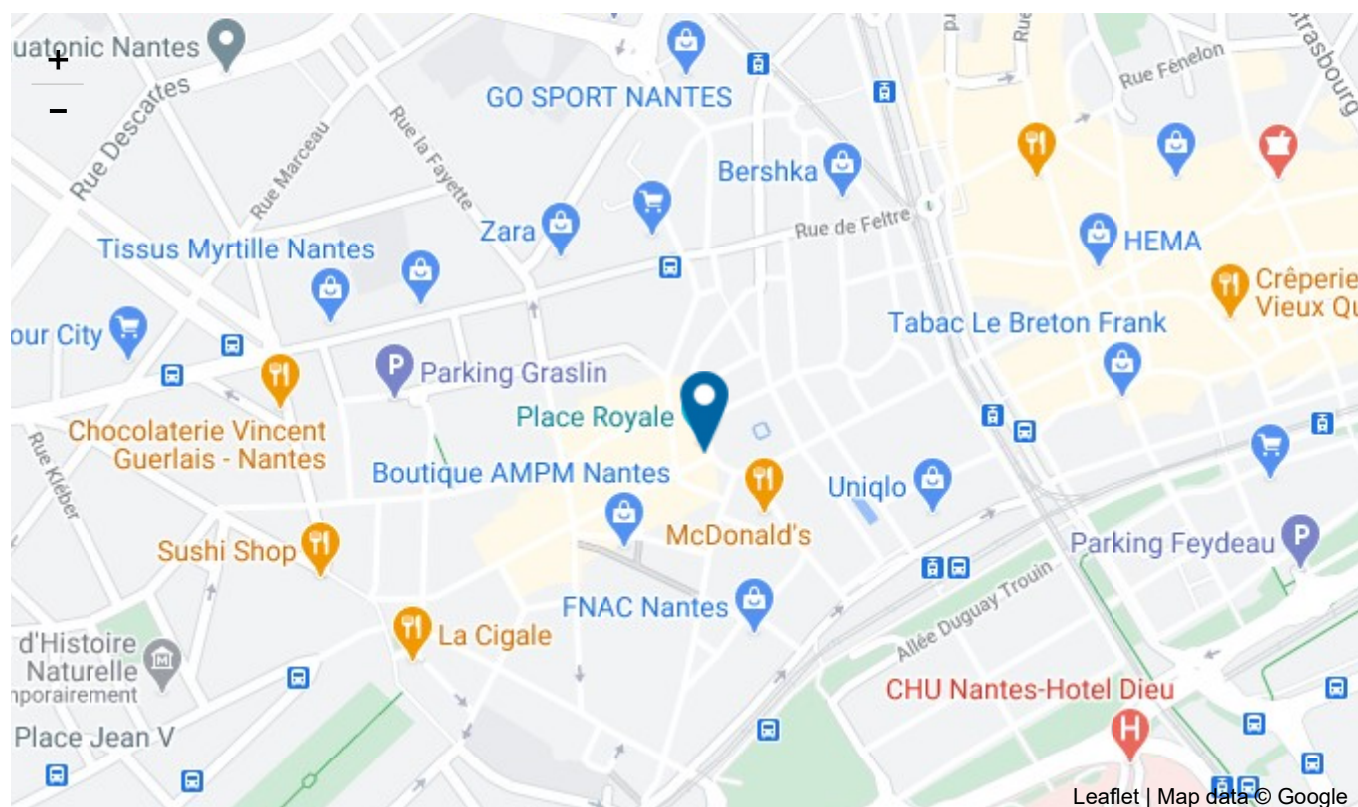
Specific Requirements

The recruited post-doc fellows will work in two different laboratories of the network on different datasets and clinical applications.

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