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HR EXCELLENCE IN RESEARCH

PHD STUDENT

DATA SCIENCE & AI

LABORATORY OF IMAGE SYNTHESIS AND ANALYSIS – UNIVERSITÉ LIBRE DE BRUXELLES

Personalized Radiotheranostics Through the Application of Multimodal Data and Advanced Artificial Intelligence Methods

Job description

We are seeking a highly motivated candidate with a Master degree in Computer Science, Civil (ideally Biomedical) Engineering, Medical Physics, or equivalent, to conduct research in an ambitious project titled: "Personalized Radiotheranostics Through the Application of Multimodal Data and Advanced Artificial Intelligence Methods". The project will focus on all aspects of data science; from supporting the creation of structured databases to the development and validation of multi-modal (including imaging) data analysis pipelines using machine- and deep learning. The project is part of the larger, EU-funded Thera4Care project, and will be carried out on ULB's ERASME campus (Anderlecht, Brussels) in the Data Science & AI Research Unit of the Institut Jules Bordet (the Belgian reference centre for cancer treatment), in strong collaboration with Department of Nuclear Medicine.

Project description

Radiotheranostics is an emerging approach in nuclear medicine that combines targeted molecular imaging and radionuclide therapy to enable patient-specific diagnosis and treatment. It is particularly relevant in metastatic prostate cancer, where agents targeting prostate-specific membrane antigen allow both accurate disease characterization and targeted delivery of therapeutic radiation. Despite these advances, patient outcomes remain heterogeneous, and optimizing treatment selection and sequencing requires improved methods for integrating and interpreting complex clinical and imaging data.

This project within Thera4Care (work packages 6 and 7) focuses on the development of advanced data science and artificial intelligence methodologies for personalized radiotheranostics. The work will be conducted within the international Thera4Care consortium, consisting of both clinical as well as industry partners. Multicentric data will be available. The objective is to construct robust patient stratification and treatment response prediction models by integrating heterogeneous and multimodal datasets, including molecular imaging (e.g., PET/SPECT), clinical and laboratory variables, and longitudinal quantitative dosimetry derived from early therapy cycles. Emphasis is placed on modeling

temporal dynamics of therapy response, leveraging longitudinal data to capture intra-patient variability and treatment adaptation over time.

Further information on the project can be obtained either through the project website or by contacting: Prof. Ir. Jennifer Dhont (ULB / Institut Jules Bordet) - jennifer.dhont@ulb.be.

Profile

We are looking for a highly motivated, pro-active and creative PhD student who can work in a multidisciplinary environment composed of physicists, computer scientists, data scientists and physicians. The candidate must be able to work independently, as well as demonstrate a strong commitment to the team and have good organizational skills to manage the (international and inter-disciplinary) collaborations in this project. The ideal candidate should:

- Hold a Master of Science or Engineering degree in one of following disciplines: Computer Science, Physics, Biomedical Engineering, Medical Physics or equivalent;
- Have demonstrated coding skills (Python, MATLAB or other);
- Show proof of proficiency in English, both in oral and written communication;
- Be a team player who can work autonomously and who is able to meet deadlines;
- Be willing to spend part of her/his time abroad for research activities and participation in workshops and conferences;
- Be willing to step out of their comfort zone by learning concepts outside of their initial scientific background (medical oncology, data science);
- Experience in - or knowledge of - bioinformatics will be viewed as a significant advantage;
- Ex Experience in - or knowledge of – medical physics and/or radiation dosimetry will be viewed as a significant advantage;
- Experience with a deep learning framework (Tensorflow, PyTorch) is a plus;
- A good knowledge of data science, medical image analysis or other omics analysis will be considered as an asset.
- Meeting the eligibility criteria to apply for an FNRS-ASP grant will be considered a plus.

While some flexibility is possible, we expect team members to be on-site at least 80% of the time during the first year to support collaboration and knowledge sharing.

Application procedure

The position is for an initial duration of one year, renewable to a total maximum of 48 months. The project will start September or October 1st, 2026 (depending on the candidate). Soon to be graduating master students are welcome to apply provided that they will have graduated before the start of the position. The candidates already in possession of a PhD are not eligible. The applicant should provide a motivation letter, curriculum vitae, a summary of previous research work / master thesis and the name and e-mail addresses of two reference persons by e-mail to Prof. Ir. Jennifer Dhont (Jennifer.dhont@ulb.be) by **May 15th 2026** at the latest. Selected candidates will then be interviewed in the following weeks.