

Title: Senior Researcher in Genomics and AI for Microbiome Data Analysis

Department: Computer Science – ADAPT Research Group

Contract Type: 12 Month Fixed Term, Whole Time Contract

Location: Bishopstown Campus, Cork

Reporting to: Dr Haithem Afli & Dr Francesca Bottacini

Overview of ADAPT Research Group:

ADAPT is a pioneering research centre, coordinated by Trinity College Dublin and involving several top-tier academic institutions across Ireland, including MTU. The centre is dedicated to developing advanced AI-driven digital content technologies that emphasise personalisation, privacy, ethics, and inclusivity, aiming to create a balanced digital society by 2030.

Munster Technological University (MTU), in collaboration with the ADAPT Centre, invites applications for a Senior Researcher position specialising in Bioinformatics, with a focus on Natural Language Processing (NLP) and Deep Learning applied to the analysis of microbiome data. This opportunity is situated in Cork, Ireland's vibrant and culturally rich second-largest city, offering an exceptional environment for students and researchers alike. The successful candidate will have the chance to work on cutting-edge research in a world-leading SFI research centre for AI-Driven Digital Content Technology.

Location:

Reporting to the Principal Investigator, Dr Francesca Bottacini, this position is based in the MTU Bishopstown campus in Cork, Ireland in the first instance.

Duties of the Post:

The Senior Researcher will join the Human-Centred Research Group at MTU, focusing on the development of innovative bioinformatic algorithms and pipelines that utilise Large Language Models to better understand the complexity of genomic data.

As part of the project, the candidate will develop new bioinformatic algorithms and pipelines involving Deep Learning and Large Language Models for information-extraction, classification and functional prediction of genomic data obtained by NGS sequencing of human gut-related samples (both viromes and metagenomes). The conducted research will contribute to elucidating the diversity of microbial components of microbiome and virome data, improve

their taxonomical classification and extend our ability for functional prediction of uncharacterised proteins using structure-based analysis and Artificial Intelligence.

This collaborative research project involving partners such as MTU, ADAPT and APC Microbiome Ireland presents the successful candidate with the opportunity to work in a supportive, exciting, fast moving and excellent technical environment, playing a guiding role in a research project. The motivation of the team is to grow this research-led initiative into effective commercialisation of the research work products.

The role will also include an opportunity to carry out research in Deep Learning focusing on genomic data analysis and Artificial Intelligence for the identification and development of novel functional food products. In collaboration with the Principle Investigator, the Researcher can co-supervise and support postgraduate students working on the same topic.

The Researcher will:

- be responsible for designing and implementing new genomic analysis methods.
- be responsible for the development of new models and/or pipelines for the functional analysis, classification and functional prediction of microbiome and virome datasets.
- Work on the analysis and the visualisation of the results.
- Actively participate in the dissemination of research findings through high-impact academic journals, conferences, and seminars.
- Collaborate closely with the Principal Investigator to participate in project calls, meetings, and presentations, both within Ireland and internationally.
- Assist in the preparation of project deliverables, reports, and documentation, ensuring adherence to project timelines and goals.
- Contribute to the supervision of postgraduate students' research activities, providing mentorship and supporting their academic development.
- Pursue relevant training and professional development opportunities to remain at the forefront of NLP and federated learning research fields.
- Perform necessary administrative tasks related to the research programme, including data management, ethics submissions, and progress reporting.

The appointee shall carry out the lawful instructions of the President (or authorised Officer) and comply with the requirements and regulations of the Minister for Further and Higher Education, Research, Innovation and Science.

Qualification Requirements and Selection Criteria for role:

Qualifications (Essential):

- A PhD, or be near the completion of their PhD, in a relevant field of Bioinformatics, Machine Learning and Natural Language Processing, ensuring a deep understanding of the theoretical and practical aspects of these disciplines.

OR

- A significant research experience in genomic data analysis and Artificial Intelligence, marked by a minimum of 2 years in roles directly linked to NGS data processing, Machine Learning and development of AI-assisted analysis methods, will also be considered. This experience should demonstrate a tangible impact on the field and compensate for the absence of a PhD qualification.

- Those close to completing a Master's degree in Computational biology, Bioinformatics, Data Analytics and Artificial Intelligence may be considered, especially if they have engaged in substantial projects or research pertinent to the development and application of AI methods.

Knowledge and experience (Essential):

- Previous experience working with NGS microbiome data processing and analysis.
- Experience in designing and conducting experiments on high-performance computing clusters, showcasing technical proficiency and an ability to manage complex computational tasks.
- An established record of providing research supervision and support to students at the postgraduate level, demonstrating a capacity for mentorship and academic leadership.
- A strong publication record in international peer-reviewed publications and presentations at top-tier conferences and journals, reflecting an active and successful research career.
- Excellent written and verbal communication and interpersonal skills, with the ability to convey complex technical information clearly and collaborate effectively with various stakeholders.

Knowledge and experience (Desirable):

- Previous research experience in Machine Learning, Deep Learning and NLP.
- Familiarity with statistics and microbiome analysis software and working on Linux environments.
- Previous project management or administrative experience.

NOTE: In addition to the minimum qualifications, it may be necessary to introduce further shortlisting criteria. Therefore, candidates may be shortlisted on the basis of qualifications and suitable experience based on details given in the application. Candidates should note that they may be called for more than one interview. Upon completion of interview, a panel will be formed from appointable candidates.

Other attributes:

- Good communication and interpersonal skills
- Evidence of ability to work on own initiative as well as part of a team
- Ability and willingness to work in a collaborative environment

Remuneration, Benefits and Facilities:

Salary scale effective 1 January 2024

Remuneration will be on the Senior Researcher Salary scale (€48,660 - € 60,047) per annum in line with relevant experience

The rate of remuneration for all appointments may be adjusted from time to time with government policy.

Additional Benefits:

- Comprehensive Sick Leave Policy
- Paid maternity leave
- Employment Assistance Programme
- Staff Discount Scheme
- Gym Access (reduced membership cost)

On site Facilities:

- On site Car Parking
- On site dining facilities

- On site TFI Bike Sharing Station

Interview & Additional Information:

Interview Process:

If invited to interview, candidates are likely to be assessed at the interview under the following criteria. Additional criteria may be added for the interview as the need arises.

- Qualifications (Academic & Professional)
- Relevant Industry/Professional Experience
- Teaching & Learning Experience
- Communications & Interpersonal Skills
- Research Knowledge and Experience
- Team Working and Organisational Skills

Shortlisted candidates will be invited to attend for interview.

Additional Information:

A successful candidate will be required to submit a passport, documentary evidence confirming academic qualifications, and to undergo a medical examination. Garda vetting and/or an international police clearance may also be required. References will be sought in relation to successful candidate.

MTU welcomes applications from non-EEA citizens. However, employee permit regulations set by the Department of Enterprise, Trade & Employment must be strictly adhered to. Any appointment offer to Non-EEA candidates is subject to the granting of a Hosting Agreement by the Euraxess Ireland or relevant Immigration permissions/stamp.

Candidates may be required to produce documentary evidence to support any statements made by them on their application form or any supporting documentation.

Candidates should note that any inaccurate information will invalidate their application.

Application Process:

Applications by MTU eRecruitment system only. Applications will not be accepted in any other format or through any other channel of communication. Please log on to www.mtu.ie/vacancies to apply for this position.

**Closing date for receipt of completed
applications is
1.00 pm on 3rd May 2024.**

The information given in this document is of a general information nature only and should not be taken as contractual.

MTU is an equal opportunities employer.

Important Notes:

- Screening and short-listing only takes place on the basis of information submitted on the application. In addition to the minimum criteria, it may be necessary to introduce further shortlisting criteria. Candidates should note that they may be called for more than one interview.
- Please ensure that full information is given on qualifications and that the information is accurate and corresponds to the original transcript of qualifications.
- Please ensure that those you nominate as referees are contacted by you and will be able to supply a reference without delay if requested.
- The University regrets that it cannot pay expenses for candidates attending interviews for this post or for taking up the position, if appointed.
- Applications received after the closing date will not be accepted.
- Appointments will be subject to Garda vetting.