

Job Description

Job Title:	Research Associate in Biomedical NLP
Department/Division/Faculty:	Department of Metabolism, Digestion, Reproduction/Division of Systems Medicine/Section of Bioinformatics/Faculty of Medicine
Campus/Location:	Hammersmith Campus (East Acton)
Job Family/Level:	Research Job Family, Research Associate* (Research salary scale)
Responsible to:	Dr Joram Pasma
Key Working Relationships (Internal):	Dr Joram Pasma, Dr Marek Rei (Department of Computing), Dr Diego Alonso Alvarez (Research Computing Service), Adrian D'Alessandro (Research Computing Service)
Key Working Relationships (External):	Dr Tim Beck (University of Leicester)
Contract type:	Full time and Fixed term for 24 months

Purpose of the Post

Applications are encouraged for a Research Associate position within a four-year research project that strives to develop new methodologies to address the current gaps in our knowledge and lead to establishing a tool that will assess diet-induced non-communicable disease (NCD) risk. The project is funded by EU HORIZON and UKRI and titled "CoDiet: Combating diet related non-communicable disease through enhanced surveillance" and involves 17 partners from 10 countries.

Work package (WP) 1 investigates the development of AI driven literature searching tools to bring clear understanding of the large global literature of the physiological and metabolic links between diet and NCD to help other WPs prioritise their analytical and data science tools. WP1 is led by academic investigators from Imperial College London (Dr Joram Pasma, Dr Marek Rei, Prof Gary Frost) and the University of Leicester (Dr Tim Beck) and involves multiple EU partners.

This position involves developing standardised data formats (e.g. processing articles from various sources), biomedical named entity recognition (bioNER) algorithms (e.g. what are the reported phenotypes, genotypes, methodologies) with access to dedicated GPU resources in the Department of Computing, text summarization (e.g. to focus on summarising key sentences and results identified from the main text rather than the abstract) and interactive visualisation of results in online team-based annotation software (a consortium effort to curate a high-quality training and test set). The Research Associate will be expected to submit publications to refereed journals and/or conference proceedings.

Key Responsibilities

The topic area of diet and its relationship with development of NCD risk factors is very broad. It would be very ambitious to systematically review the literature across these broad topic areas and have the results available to be used within the project using traditional dietary assessment. Therefore, we will adopt a new AI based literature searching methodology. This will allow high quality literature review but in a fraction of the time of traditional reviews using the ongoing developments in the field of (biomedical) natural language processing (NLP).

Specific Research Duties:

- To create automated systems for crawling and processing large numbers of medical articles from various online sources

- To apply existing bioNER algorithms for annotation of key terms and sentences
- To fine-tune the algorithms using feedback from a team of expert annotators within the CoDiet consortium
- To deploy the fine-tuned on the remaining literature (we estimate this to be >20,000 relevant articles) in fully automated fashion
- To create a live, interactive graph that summarises the literature and connections between entities that will facilitate the knowledge transfer

Further Research Duties:

- To take initiatives in the planning of research
- To conduct and plan own scientific work with appropriate supervision
- To direct the work of small research teams in the Group
- To ensure the validity accuracy and reliability of data, at all times
- To maintain accurate and complete records of all findings
- To attend relevant meetings, workshops and conferences, as necessary
- To present data at national and international meetings
- To submit publications to high quality, refereed journals and/or conference proceedings
- To develop contacts and research collaborations within the College, the CoDiet consortium and the wider community
- To collaborate with other allied scientists within Imperial College and elsewhere in the UK and abroad (CoDiet staff from partners in Spain, Ireland and Greece)
- To provide guidance to staff and students
- To assist in the supervision of undergraduate and postgraduate research students as required

Other Duties:

- To actively participate in, and present at, Group research meetings and internal seminars
- To undertake any necessary training and/or development
- To undertake appropriate administration tasks such as to write reports for submission to research sponsors
- To contribute to bids for research grants
- To promote the reputation of the Group, the Department and the College
- To comply with the College, Division, and Unit safety practices and to attend courses on safety when appropriate
- Any other duties as may be deemed reasonable by Head of group as well as Head of Division/Department/Section

Where Imperial or funder conditions necessitate, you will be required to complete timesheets for your work on projects in a timely manner.

You will receive strong mentoring in a stimulating multidisciplinary academic research environment, with access to internationally leading academics, industrial partners, research computing facilities, and networks.

Person Specification

Requirements	Essential (E)/ Desirable (D)
Candidates/post holders will be expected to demonstrate the following:	
Education	
Research Associate: Hold a PhD in computer science, biostatistics or a closely related field, or equivalent research, industrial or commercial experience	E
Research Assistant: Near completion of a PhD in computer science, biostatistics or a closely related field, or equivalent research, industrial or commercial experience	
*Candidates who have not yet been officially awarded their PhD will be appointed as a Research Assistant.	
Experience	
Practical experience within a research environment and/or productive track record of publishing in relevant and refereed journals or conference proceedings	E
Practical experience with implementing NLP applications in Python	E
Practical experience with biomedical named-entity recognition algorithms	D
Practical experience with software engineering and version control	D
Knowledge	
Knowledge of deep/machine learning research methods and statistical procedures	E
Knowledge of key concepts and methods in natural language processing	E
Basic understanding of biological and medical terminology	D
Skills & Abilities	
Ability to conduct a detailed review of recent literature	E
Advanced Python programming skills	E
Ability to develop and apply new concepts	E
Creative approach to problem-solving	E
Excellent verbal communication skills and the ability to deal with a wide range of people	E
Excellent written communication skills and the ability to write clearly and succinctly for publication	E
Excellent data visualisation skills with high attention to detail	E
Ability to organise own work with minimal supervision	E
Ability to prioritise own work in response to deadlines	E
Ability to direct the work of a small research team and motivate others to produce a high standard of work	D
Other	
Willingness to work as part of a team and to be open-minded and cooperative	E
Flexible attitude towards work	E
Discipline and regard for confidentiality and security at all times	E
Willingness to undertake any necessary training for the role	E
Willingness to travel both within the United Kingdom and abroad to conduct research and attend conferences	E
Willingness to work out of normal working hours (including weekends) if the requirements of the project demand	E
Willingness to (co-)supervise Master student research projects	D

Further Information

Please note that job descriptions cannot be exhaustive, and the post-holder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

Imperial College is committed to equality of opportunity and to eliminating discrimination. All employees are expected to follow the [Imperial Values & Behaviours framework](#). Our values are:

- Respect
- Collaboration
- Excellence
- Integrity
- Innovation

Employees are also required to comply with all College policies and regulations paying special attention to: Confidentiality, Conflict of Interest, Data Protection, Equal Opportunities, Financial Regulations, Health and Safety, Information Technology, Smoking, Private Engagements and Register of Interests. They must also undertake specific training and assume responsibility for safety relevant to specific roles, as set out on the [College Website Health and Safety Structure and Responsibilities](#) page.

The College is a proud signatory to the San-Francisco Declaration on Research Assessment (DORA), which means that in hiring and promotion decisions, we evaluate applicants on the quality of their work, not the journal impact factor where it is published. For more information, see <https://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-evaluation/>

The College believes that the use of animals in research is vital to improve human and animal health and welfare. Animals may only be used in research programmes which are ultimately aimed towards finding new treatments and making scientific and medical advances, and where there are no satisfactory or reasonably practical alternatives to their use. Imperial is committed to ensuring that, in cases where this research is deemed essential, all animals in the College's care are treated with full respect, and that all staff involved with this work show due consideration at every level. [Find out more about animal research at Imperial.](#)

We are committed to equality of opportunity, to eliminating discrimination and to creating an inclusive working environment for all. We therefore encourage candidates to apply irrespective of age, disability, marriage or civil partnership status, pregnancy or maternity, race, religion and belief, gender reassignment, sex, or sexual orientation. We are an [Athena SWAN Silver Award](#) winner, a [Disability Confident Leader](#) and a [Stonewall Diversity Champion](#).

February 2023