Job Description

Imperial College London

Job Title:	Research Associate in Machine Learning
Department/Division/Faculty:	Brain Sciences / Dementia Research Institute Care Research & Technology Centre (CR&T)
Campus location:	Hammersmith Campus (East Acton)
Job Family/Level:	Academic & Research, Research Associate
Responsible to:	Professor Payam Barnaghi, Deputy Head of UK DRI CR&T
Line Management responsibility for:	-
Key Working Relationships (internal):	Professor Payam Barnaghi Research, technical staff, and students of the UK DRI at Imperial College London and in the Department of Brain Sciences UK DRI staff and management in the Hub and in other Centres, research and administrative staff from the Department of Medicine.
Key Working Relationships (external):	UK DRI research staff in the Hub and in other Centres and Imperial College core resource staff.
Contract type:	Full time and fixed term for 3 years with potential to extend.

Research Programme

The UK Dementia Research Institute (UK DRI) Care Research & Technology (CR&T) Centre at Imperial College London is seeking an outstanding and committed post-doctoral research associate to work in machine learning applied to healthcare. The postholder will become key member of the research staff in Prof. Barnaghi's group.

The successful applicant will join a vibrant community within the CR&T, which brings together engineering, data science, psychology and medicine to develop technologies that have a direct impact on the lives of people affected by dementia. The Centre has a broad research portfolio focusing on the development and application of new approaches to the diagnosis, monitoring and care needs of people affected by dementia. We are developing new approaches to home monitoring, point-of-care diagnostics, and behavioural/cognitive analysis. Machine learning is being used to help understand disease progression and provide novel approaches to dementia care. We are integrating innovative biomarkers into patient assessment and will be conducting clinical trials technology applied to dementia care.

The UK DRI was established with ~£300 million funding to tackle the challenges of dementia. Founding funders were the Medical Research Council (UK) and charity partners the Alzheimer's Society and Alzheimer's Research UK. The CR&T was established in 2019 as the 7th Centre within UK DRI. The centre brings together engineering, science and medicine to develop technologies that have a direct impact on the treatment and quality of life of people who suffer from age-related neurological disorders. The Centre is currently focused on the short and long-term effects of COVID-19. Our work on remote assessment and support for patients affected by dementia is particularly relevant at the current time and successful candidates will have the opportunity to contribute to this critically important research area.

Purpose of the Post

We are looking for a creative and enthusiastic researcher who can take on challenging role with considerable scope for independent scientific achievement and personal growth. The successful candidates will play a central role in developing the neuroscientific and/or machine learning work within the CR&T. The post will

suit a highly motivated candidate who is interested in addressing real-world challenges and creating end-to-end solutions for problems encountered by those affected by dementia.

Candidates will be supported in their career development, including in the application for independent research funding both from the UK DRI and externally.

Areas of research focus include the development of:

- Activity and behavioural data analysis for dementia assessment.
  Continual machine learning models for predictive analysis and designing interventions to enhance cognitive function, assist quality of life and reduce the impact disease.
- Probabilistic and deep learning models applied to real-world data relevant to dementia care.
- Designing novel solutions to respond to the COVID-19 crisis that minimise the short and long-term effects of COVID-19.

The candidates should have a relevant PhD / DPhil (or be near completion), as well as holding a first degree in machine learning, computational neuroscience, software engineering, computer science, or related discipline.

The posts will involve the development of novel algorithms for healthcare technologies, including the design of deep learning and probabilistic models, with a particular focus on adaptive and continual learning as well as developing solutions for processing Internet of Things and in-home sensory data. The technical work will involve integration, verification and validation of the designed solutions. The post holders will work with the software development and clinical teams within the centre. The roles will focus on developing novel, robust and reliable solutions to support real-world applications. Experience in software development and programming, as well as in practical applications of adaptive algorithms in working with uncertain data, will be highly desirable.

Key Responsibilities

Research Duties

- To take initiatives in the planning of research
- To conduct data analysis
- To maintain accurate and complete records of all findings
- To write reports for submission to research sponsors
- To present findings to colleagues and at conferences
- To submit publications to refereed journals
- To provide guidance to staff and students
- To attend relevant workshops and conferences as necessary
- To develop contacts and research collaborations within the College and the wider community
- To promote the reputation of the Group, the Department and the College
- To conduct and plan own scientific work with appropriate supervision.
- To maintain highly organised and accurate record of experimental Work.
- To actively participate in the research programme of the Group and Centre
- To publish in high quality journals and to present data at national and international meetings.
- To participate in Group/Centre research meetings and internal seminars.
- To collaborate with other allied scientists within Imperial College and elsewhere in London and abroad, as appropriate.
- To contribute to the smooth running of the Group's/Centre's laboratories and, facilities with other scientists, clinicians, technicians and students within the laboratories.
- Assist in the supervision of undergraduate and postgraduate research students and research assistants as required.
- 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.

Other Duties

- To undertake appropriate administration tasks
- To be responsible for ensuring that data is accurate, up-to-date and complete.
- To attend relevant meetings
- To undertake any necessary training and/or development
- Any other duties commensurate with the grade of the post as directed by line manager / supervisor

Person Specification

Requirements Candidates/post holders will be expected to demonstrate the following:	**Essential (E)/ Desirable (D)**
Education	
• At Research Assistant Level: Near completion of a PhD in Machine Learning, Computational Neuroscience, Software Engineering, Computer Science, Mathematics or related discipline	**E**
• At Research Associate Level: a PhD in Machine Learning, Computational Neuroscience, Software Engineering, Computer Science, Mathematics or related discipline	**D**
Knowledge & Experience	
• Knowledge of machine learning and computational modelling	E
• Knowledge of research methods and statistical procedures	E
• Practical experience within a research environment and / or publication in relevant and refereed journals	E
• Dealing with specific groups of people, e.g. sponsors, patient affected by dementia	D
• Experience in machine learning frameworks and programming languages	E
• **Skills & Abilities**	
• Ability to conduct a detailed review of recent literature	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
• Ability to direct the work of a small research team and motivate others to produce a high standard of work	E
• Ability to organise own work with minimal supervision	E
• Ability to prioritise own work in response to deadlines	E
• **Personal Attributes**	
• 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 work out of normal working hours (including weekends) if the requirements of the project demand	D
• Willingness to undertake any necessary training for the role	D
• Willingness to travel both within the United Kingdom and abroad to conduct research and attend conferences	D

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.

Job Description

Imperial College is committed to equality of opportunity and to eliminating discrimination. All employees are expected to follow the 7 Imperial Expectations detailed below:

1) Champion a positive approach to change and opportunity
2) Communicate regularly and effectively within and across teams
3) Consider the thoughts and expectations of others
4) Deliver positive outcomes
5) Encourage inclusive participation and eliminate discrimination
6) Support and develop staff to optimise talent
7) Work in a planned and managed way

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 where their use is shown to be necessary for developing new treatments and making medical advances. 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.
http://www.imperial.ac.uk/research-and-innovation/about-imperial-research/research-integrity/animal-research/

Committed to equality and valuing diversity, we are an Athena SWAN Silver Award winner, a Stonewall Diversity Champion, a Disability Confident Employer and work in partnership with GIRES to promote respect for trans people.