



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Artificial Intelligence in Medical Imaging,
Faculty of Engineering



Salary: Grade 7 (£33,199 – £39,609 p.a.)

Reference: ENGCP1105

Closing date: 11 August 2019

Fixed-term for up to three years

We will consider flexible working arrangements

Research Fellow in Artificial Intelligence in Medical Imaging School of Computing

Are you an early-career researcher who enjoys developing fundamental methods with impact in challenging problems in medical image computing? Do you have a strong background in computer science, statistics, mathematics or physics and want to apply it to medical image computing? Would you like to work with cardiologists, oncologists and endocrinologists and have access to massive clinical image databases? Do you have a passion for combining computational algorithms, modelling and simulation to address key problems in medicine? Are you ready to think out-of-the-box, innovate and find solutions to challenging problems?

The Centre for Computational Imaging and Simulation Technologies in Biomedicine ([CISTIB](#)), within the Faculties of [Engineering](#) and [Medicine & Health](#), involves various academics and their research groups. CISTIB is a highly interdisciplinary team with expertise ranging from very algorithmic contributions to machine learning and artificial intelligence in medical imaging all the way to very translational research with impact cardiology, endocrinology, oncology and surgery. CISTIB focuses on computational imaging, image-based computational physiology, and modelling and simulation in biomedicine. CISTIB works in close cooperation with clinicians from various research centres from the [University of Leeds](#) and the academic hospitals of the [Leeds Teaching Hospital Trust Foundation](#), the largest NHS Trust of the UK.

Clinical areas where CISTIB members have contributed to and made substantive innovations in the field are focused around the cardiovascular, musculoskeletal and neuro sciences, where they have developed diagnostic and prognostic quantitative image-based biomarkers and methods and systems for interventional planning and guidance. The centre hosts academic members from the University of Leeds and Research Fellows, Research Associates, PhD Students and Scientific Software Developers forming a cross-disciplinary team committed to clinical translation of their innovations.

The successful candidate will contribute to develop fundamental methods for deep learning and artificial intelligence for medical image analysis and computational physiology. You will work across multiple projects in CISTIB including, for instance, the [InSilc](#) project, where CISTIB in collaboration with groups across Europe seeks to



develop an in-silico clinical trial platform for designing, developing and assessing drug-eluting bioresorbable vascular scaffolds (BVS). Another project funded by the Royal Academy of Engineering is the INSILEX project where CISTIB develops new generative models (graphical models, generative adversarial networks) to build virtual patients and virtual populations from very large datasets, like the UK Biobank, as part of our effort to realise the vision of in silico clinical trials of medical devices. A final example, is the BQ-Minded project, a Marie Curie Training network focused on developing methods for Quantitative MRI for estimating tissue microstructure parameters and where deep learning can help to solve ensuing inverse and parameter estimation problems.

Using your expertise in computing, mathematics and statistics, you will contribute to develop new methods for highly automated and robust solution of segmentation, registration, interpolation, data imputation, three-dimensional reconstruction, and classification, and prediction from large image (and non-image) databases. You will contribute technical and scientific developments that fulfil project objectives while ensuring the approaches stand themselves as contributing to the field of artificial intelligence and/or to statistical and deep learning.

What does the role entail?

As a Research Fellow, your main duties will include:

- develop compelling and original research in data science and machine learning;
- lead research projects supporting the principal investigator;
- take initiatives in the planning and leading of research of the small team entrusted to your responsibility;
- direct the work of small research teams, supervising and taking responsibility for their research delivery under the coordination of the principal investigator;
- be engaged in cutting edge applied data science research;
- publish research papers in peer-reviewed journals;
- attend and present research at international conferences;
- promote the reputation of CISTIB and the School;
- develop contacts and research collaborations within the School and the wider community;
- support the delivery of industrial partnerships;
- support the lead faculty in supervising postdoctoral researchers, postgraduate students and undergraduate research projects;



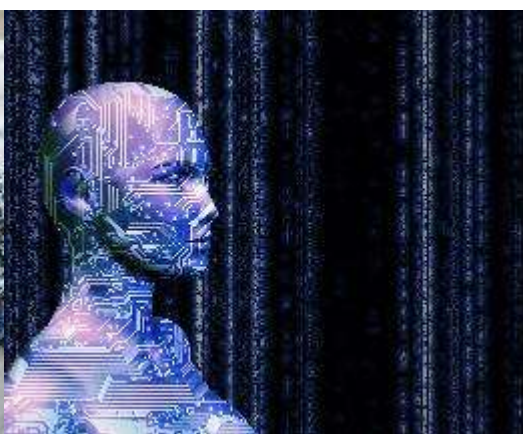
- play a key role in the development and delivery of CISTIB's objectives and educational activities;
- be committed to personal development to succeed in career progression.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As a Research Fellow, you will have:

- A PhD (or close to completion) or equivalent degree (or close to completion) in a relevant area of computer science, mathematics, physics, electrical engineering, or another related field;
- The ability to demonstrate a clear research vision and the ability to propose research papers and short-term projects;
- Strong leadership and management skills;
- Deep knowledge of the foundation of machine learning and AI in general;
- Solid analytic and theoretical skills in the algorithms and mathematics of machine learning demonstrated through papers in top journals;
- Experience working with medical images and modern image processing libraries;
- Programming skills using with modern scientific and machine learning software frameworks;
- Strong research or practical record in machine learning and/or its applications;
- Effective communication skills, with the ability to understand user requirements and communicate technical information to clinical partners, and to disseminate the research work and outcomes to both the scientific community and the wider scientific community;
- Ability to actively engage with clinical and industrial collaborators to better understand the clinical problems which motivate the research and to ensure that the solutions developed are viable;
- Ability to work effectively as part of a multidisciplinary team and to collaborate, co-operate and participate with others to achieve common objectives, sharing experience and ideas, and working together to make the most of technology and innovation breakthroughs;



- Ability to grow as an early-career researcher and in the future take leadership of a small team of early-career researchers with responsibilities of thesis supervision and day-to-day organisation of research tasks.

How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by 23.59 (UK time) on the advertised [closing date](#).

Contact information

To explore the post further or for any queries you may have, please contact:

[Professor Alex Frangi](#), Diamond Jubilee Chair of Computational Medicine

Tel: +44 (0)113 343 5430

Email: a.franji@leeds.ac.uk

Additional information

Faculty and School Information

Further information is available on the research and teaching activities of the [Faculty of Engineering](#) and the [School of Computing](#).

A diverse workforce

The Faculty of Engineering is proud to have been awarded the [Athena Swan Silver Award](#) from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our [equality and inclusion webpage](#) provides more information.

Working at Leeds

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.



Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at disclosure@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

