



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Computational Modelling of the Hip, Faculty of Engineering & Physical Sciences



Salary: Grade 7 (£33,797– £40,322 p.a.)

Reference: EPSME1010

Closing date: 08 December 2019

Fixed-term till 31 May 2021

We will consider flexible working arrangements

Research Fellow in Computational Modelling of the Hip

Institute of Medical & Biological Engineering, School of Mechanical Engineering

Do you have a strong technical background in computational biomechanics? Would you like to work as part of a multidisciplinary team to address clinically-driven challenges?

This project is part of a £1 million EPSRC Healthcare Technologies Impact Partnership grant. The aim of the programme of work is to develop novel design analysis tools to increase precision and reduce variation in total hip replacement surgery. Through the project, we are developing a suite of computational simulation tools for total hip replacement systems that can be used to evaluate current devices and be embedded into the development process for new device designs.

Variances in surgical positioning of total hip replacement components can have a major effect on edge loading, torque and wear. We have developed a range of computational modelling tools to evaluate the effects of surgical positioning on device performance. This project will focus on expanding these capabilities to incorporate the effects of patient factors, including anatomical and kinematical variables. The work will involve processing image and kinematic data from patients and applying the findings as inputs to numerical and finite element models of the hip. There will be opportunities to work closely with clinical partners in the NIHR Leeds Biomedical Research Centre, as well as with our industry partners on the grant, DePuy Synthes.

You will have a PhD (or close to completion) in computational modelling for a musculoskeletal application, with a strong technical background in computational biomechanics, and expertise in modelling the musculoskeletal system. You will have a proactive approach to working in a multidisciplinary team across academia, industry and clinical practice.

What does the role entail?

As a Research Fellow, your main duties will include:

- Leading the development of analysis tools that incorporate patient variance, working with clinical image and kinematic data to extract relevant parameters, and using a range of computational methods as appropriate.



- Leading the evaluation of patient variables and collaborating with other researchers to incorporate the most relevant parameters into computational models of hip replacement performance.
- Liaising with clinical colleagues to access and process the relevant data, ensuring adherence with appropriate ethical and data protection standards.
- Liaising with industry partners to ensure the work aligns with future applications of the methodologies, such as design tools or for improved patient stratification.
- Documenting the methods developed and making them available to other researchers within the group.
- Preparing papers for publication in leading international journals and independently writing reports.
- Communicating or presenting research results through publication or other recognised forms of output, including presenting your results at leading international conferences.
- Working both independently to generate and pursue original research ideas in the appropriate subject area, and working effectively as part of a larger team of researchers.
- Participating in the Institute of Medical and Biological Engineering (iMBE) public and patient engagement activities.
- Working within and applying the standard operating procedures, health and safety regulations and quality assurance procedures of the School, Faculty and University.
- Maintaining your own continuing professional development.
- Potentially contributing to the training of undergraduate or postgraduate students, including assisting with the supervision of projects in areas relevant to the project.

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) in computational modelling for a musculoskeletal application;



- A strong background in musculoskeletal modelling including either dynamic modelling or image-based finite element modelling or both;
- The ability to write code for data analysis or software scripting;
- Experience of working in multidisciplinary teams;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;
- A proven track record of peer-reviewed publications in high impact factor journals, or international conference presentations, commensurate with level of experience;
- Excellent written and verbal communication skills including presentation skills;
- Proven ability to manage competing demands effectively, responsibly and without close support;
- A proven ability to work well both individually and in a team;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience of finite element modelling for musculoskeletal applications;
- Knowledge of modelling contact using finite element methods;
- Experience of capturing and simulating variance within computational models;
- Experience of laboratory-based work.

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:

Alison Jones, [Lecturer](#)

Tel: +44 (0)113 343 2099

Email: a.c.jones@leeds.ac.uk



Additional information

Faculty and School Information

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

A diverse workforce

The Schools in the Faculty of Engineering & Physical Sciences are proud to have been awarded the Athena SWAN [Bronze](#) or [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.

