UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Assistant in Computational Modelling of the Human Knee, Faculty of Engineering & Physical Sciences

Salary: Grade 6 (£27,511 - £32,817 p.a.)

Reference: EPSME1024

Closing date: 17 July 2020

Fixed-term till 30 September 2021

We will consider flexible working arrangements

Research Assistant in Computational Modelling of the Human Knee
Institute of Medical & Biological Engineering, School of Mechanical Engineering

Do you have a strong technical background in computational mechanics with an interest in biomedical engineering? Would you like to work as part of a multidisciplinary team to address a clinically-driven challenge?

This project is part of a major £4M EPSRC Programme Grant on Optimising Knee Therapies. The aim of the programme is to develop preclinical testing methods for early-stage treatments for knee osteoarthritis so their performance can be optimised.

In the UK, one third of people aged over 45 have sought treatment for osteoarthritis. The knee is the most common site for osteoarthritis and there is a major unmet clinical need for effective earlier stage interventions that delay or prevent the requirement for total knee replacement surgery.

The aim of this project is to use methods that have been previously developed to generate computational models of the human knee. The models will be used to evaluate a range of treatments to the cartilage and meniscus. You will join a team that have developed image-based finite element models of the tibiofemoral joint. Specifically, your role will be to develop finite element models from 3D image data, using bespoke software and novel processes developed in-house.

You will have a strong background in finite element analysis related to tribology or material interfaces and contact mechanics, and have a proactive approach to working in a multidisciplinary team with engineers, biologists and clinicians.

What does the role entail?

As a Research Assistant, your main duties will include:

- Working independently to generate finite element models of the knee from existing image data. You will use methods that have been developed and previously documented in-house and proprietary software;
- Undertaking initial testing of the finite element models using Abaqus software, and trouble-shooting/iteratively changing the models to obtain satisfactory outcomes;
- Carefully documenting the methods used and results obtained;
- Working collaboratively with researchers in the team to curate the models in such a way that they can be readily used by future researchers.
- Independently writing reports and helping with the preparation of papers for publication;
- Communicating or presenting research results at internal meetings and, where there is opportunity, at external conferences;
- 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
- 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.

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 Assistant, you will have:

- A good first degree (2:1 or 1st) in medical or mechanical engineering, or a related discipline;
- Demonstrable experience of using finite element analysis software, preferably Abaqus, including generating and evaluating models and trouble-shooting;

- A good grounding in the theory of structural finite element analysis;
- Some experience of programming or using scripts within software to automate processes;
- Some experience of image processing or signal processing;
- Excellent written and verbal communication skills including presentation skills;
- Excellent data management and curation skills;
- A proven ability to manage time, prioritise workload and work to strict deadlines;
- A proven ability to work independently and collaboratively within multidisciplinary teams;

You may also have:
- Experience of using 3D medical images (MRI, CT);
- Experience in using finite element models with contact or non-linear materials;
- Experience in developing image-based finite element models;
- Knowledge of human anatomical terminology;
- Experience of scientific writing.

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:

Marlène Mengoni, Lecturer
Tel: +44 (0)113 343 5011
Email: m.mengoni@leeds.ac.uk

Additional information

Faculty and School Information

Further information is available on the research and teaching activities of the [Faculty of Engineering & Physical Sciences](#), and the [School of Mechanical Engineering](#) and the [Institute of Medical & Biological 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.