UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Soft Magnetic Surgical Robots, Faculty of Engineering and Physical Sciences

Salary: Grade 7 (£36,333 – £43,155 p.a.) Due to funding restrictions, an appointment will not be made higher than £38,474 p.a.

Reference: EPSEE1103

Closing date: Thursday 29th June 2023

Fixed-term for 2 years

We are open to discussing flexible working arrangements

Research Fellow in Soft Magnetic Surgical Robots, School of Electronic and Electrical Engineering.

Do you want to make a difference in patients' quality of life by creating innovative robots that are able to treat incurable diseases? Are you excited about contributing to scientific research in surgical robotics? Are you able to think outside the box to find innovative solutions to life-threatening diseases? Do you want to join a world-leading team of roboticists, manufacturing engineers, and clinicians?

We are looking for a proactive individual to join our Science and Technology Of Robotics in Medicine (STORM) Lab, bringing their excitement for scientific research in surgical robotics with them.

At the STORM Lab, we strive to improve the quality of life for people undergoing soft-tissue surgery and flexible endoscopy by creating miniature and non-invasive robots. This includes the creation and investigation of miniature capsule-like or tentacle robots to work inside the human body. At the STORM Lab, we are designing and creating soft and compliant robotic devices that can be used within the human body to detect and cure diseases in a non-invasive way.

This vacancy is created by a major EPSRC grant awarded to the University of Leeds, which aims to define a new generation of soft magnetic surgical robots that can be guided within the human body by magnetic fields to diagnose and treat cancer at an early stage thanks to advanced imaging capabilities. The candidate will join a multi-disciplinary research team aiming at exploring innovative processes to manufacture patient-specific intelligent soft magnetic robots, modelling their behaviour under an external controllable magnetic field, and filed gradient, and testing them in realistic anatomical models. Target clinical applications include early diagnosis and treatment of colorectal, pancreatic, and lung cancer.

The fabrication and manufacturing elements will be conducted in collaboration with Professor Russell Harris of the Future Manufacturing Processes Research Group at the University of Leeds.

What does the role entail?

As a Research Fellow, your main duties will include:

- Design, fabrication and lab-based evaluation of small-scale magnetic medical robots for endoscopy and surgery;
- Development and application of soft magnetic manipulators to obtain diagnosis and/or deliver therapy through winding and convoluted pathways;
- Contribute to the pre-clinical assessment of developed systems in animal and/or cadaveric models in collaboration with our clinical partners;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Developing research objectives and proposals and contributing to setting the direction of the research project and team including preparing proposals for funding in collaboration with colleagues;
- Making a significant contribution to the dissemination of research results by publication in leading peer-reviewed journals and by presentation at national and international meetings;
- Working independently and as part of a larger team of researchers, both internally and externally, to develop new research links and collaborations and engage in knowledge transfer activities where appropriate;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own research;
- Maintaining your own continuing professional development and acting as a mentor to less experienced colleagues as appropriate;
- Contributing to the training of both undergraduate and 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 have submitted your thesis before taking up the role) in one of the following disciplines: Mechanical Engineering, Biomedical Engineering, Computer Science, Electronic Engineering, Robotics or a closely allied discipline;
- Experience and a proven track-record in magnetic robots;
- A strong background in soft robots, continuum robots, continuum manipulators, capsule robots, eversion/vine robots, surgical instrumentation, and robotic manipulators;
- Good time management and planning skills, with the ability to meet tight deadlines and manage competing demands effectively without close support;
- A developing track record of peer-reviewed publications in international journals;
- Excellent communication skills both written and verbal, and the ability to communicate your research at national and international conferences;
- 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 pursuing external funding to support research;
- Experience in Robot Operating System (ROS) and its Gazebo simulation package, object-oriented programming language (e.g. embedded C, Matlab, Python, C++, Java, or Labview), Computer Aided Design software (e.g., SolidWorks), and Computer Aided Manufacturing (3D printing, laser cutting, etc.);
- Experience of collaborating with clinicians, including in pre-clinical trials in animal or cadaver models.

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:

Pietro Valdastri, PhD, Chair in Robotics and Autonomous Systems
Tel: +44 (0)113 343 3706
Email: P.Valdastri@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 Electronic and Electrical Engineering.

A diverse workforce
As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Engineering and Physical Sciences we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

The Faculty of Engineering and Physical Sciences are 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
We are a campus-based community and regular interaction with campus is an expectation of all roles in line with academic and service needs and the requirements of the role. We are also open to discussing flexible working arrangements. To find out more about the benefits of working at the University and what it is like to live and work in the Leeds area visit our Working at Leeds information page.

Information for disabled candidates
Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at hr@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.