UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Robotic Sensing and Control

Faculty of Engineering and Physical Sciences

Salary: Grade 7 (£41,064 – £48,822 p.a.)

Reporting to: Dr George Jackson-Mills

Reference: EPSME1218

Closing date: Sunday 20 September 2026

Fixed term (Up to 15 Months, to end by 30 November 2027 - to complete specific time limited work)

Location: Leeds main campus (with scope for hybrid working)

We are open to discussing flexible working arrangements

Research Fellow in Robotic Sensing and Control, School of Mechanical Engineering.

Would you like to be part of an ambitious new robotics project tackling invasive species in critical national infrastructure? Do you have a background in robotics? Are you motivated by applying advanced robotic systems to real-world environmental challenges?

Overview of the Role

As a key member of the Real Robotics Lab, you will lead the development of innovative robotic concepts, systems, and software for deployment in challenging water-infrastructure environments. The Real Robotics Lab manages over £3 million in current research projects, including robotics for infrastructure inspection and repair, advanced robot design and fabrication, and autonomous systems for environmental resilience.

This role forms part of an ARIA Opportunity Seed within the Engineering Ecosystem Resilience programme. The programme aims to explore bold, unconventional approaches to strengthening the resilience of ecological and engineered systems across the UK.

You will design, implement, and test early-stage robotic approaches for detecting and removing invasive zebra mussels inside raw water transfer pipelines and related submerged infrastructure. Working closely with project partners, you will contribute to sensing and modelling studies, hardware and software development, systems integration, and early feasibility demonstrations, delivering rapid prototypes and benchtop trials aligned with ARIA's fast-paced, exploratory R&D model.

Main duties and responsibilities

- Leading the design, construction, and testing of early-stage robotic systems for sensing, positioning, stabilisation, and controlled removal of invasive zebra mussels within submerged infrastructure;
- Developing and implementing innovative hardware and software solutions suitable for operation in dark, confined, and flowing water environments;


- Applying robotic platforms to tasks such as detection, approach, interaction with biological material, and controlled detachment;
- Contributing to ARIA's "learn fast" ethos by rapidly exploring uncertain technical pathways, prioritising early feasibility tests, and adopting a fast-to-fail approach to de-risk key challenges;
- Collaborating with industrial partners, water-sector stakeholders, and research institutions to meet early feasibility goals;
- Maintaining accurate project documentation, technical reports, and research data;
- Providing intellectual leadership by developing research objectives and proposals, contributing to the direction of the PRIZM project and wider team, including preparing future funding proposals in collaboration with colleagues;
- 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;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own research;
- 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;
- 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.

Qualifications and skills

Essential:

- A PhD (or have submitted your thesis before taking up the role) and a Bachelor's or Master's degree in Robotics, Mechanical Engineering, Mechatronics, Electronic and Electrical Engineering, Aerospace Engineering, or a related discipline;
- Experience in the design, construction, and testing of advanced hardware platforms for robotic or autonomous systems intended for inaccessible, water-exposed, wet, or otherwise constrained environments;
- Proficiency in software and programming for robotic sensing, control, or autonomous behaviour, ROS/ROS2, C++, Python;
- Experience in simulation and control of complex hybrid robotic systems, incorporating continuum/soft elements alongside rigid-body mechanisms, using physics-based simulation environments such as Gazebo, Isaac Sim, and MuJoCo;
- Experience in perception or sensing methods relevant to low-visibility or unstructured environments;
- Skills in using embedded systems software and hardware platforms for real-time robotic applications;
- Demonstrated creativity in designing and executing early-stage experiments or prototypes under uncertain or constrained conditions;
- 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, with the ability to communicate your research at national and international conferences;
- A proven ability to work well both independently and as part of a team;
- A strong commitment to your own continuous professional development.

Desirable:

- Experience of pursuing external funding to support research;
- Experience in designing, simulating, or implementing autonomous robotic systems, particularly in challenging or uncertain environments;
- Experience with advanced embedded systems platforms such as microcontrollers or FPGAs;


- Experience supervising PhD or postgraduate students.

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:

Dr George Jackson-Mills, Doctor of Robotics for Inspection and Maintenance
Email: G.Jackson-Mills@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.

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.

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 AdvanceHE. The Athena Swan Charter is a framework which is used across the globe to support and transform gender equality within higher education and research. Our equality and inclusion webpage provides more information.

Information for disabled candidates
Information for disabled candidates, impairments or health conditions, including requesting alternative formats, can be found under the 'Accessibility' heading on our How to Apply information page or by getting in touch by emailing HR via 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.

Salary Requirements of the Skilled Worker Visa Route
Please note that this post may be suitable for sponsorship under the Skilled Worker visa route but first-time applicants might need to qualify for salary concessions. For more information, please visit the Government's Skilled Worker visa page.

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information, please visit the Government's page, Apply for the Global Talent visa.