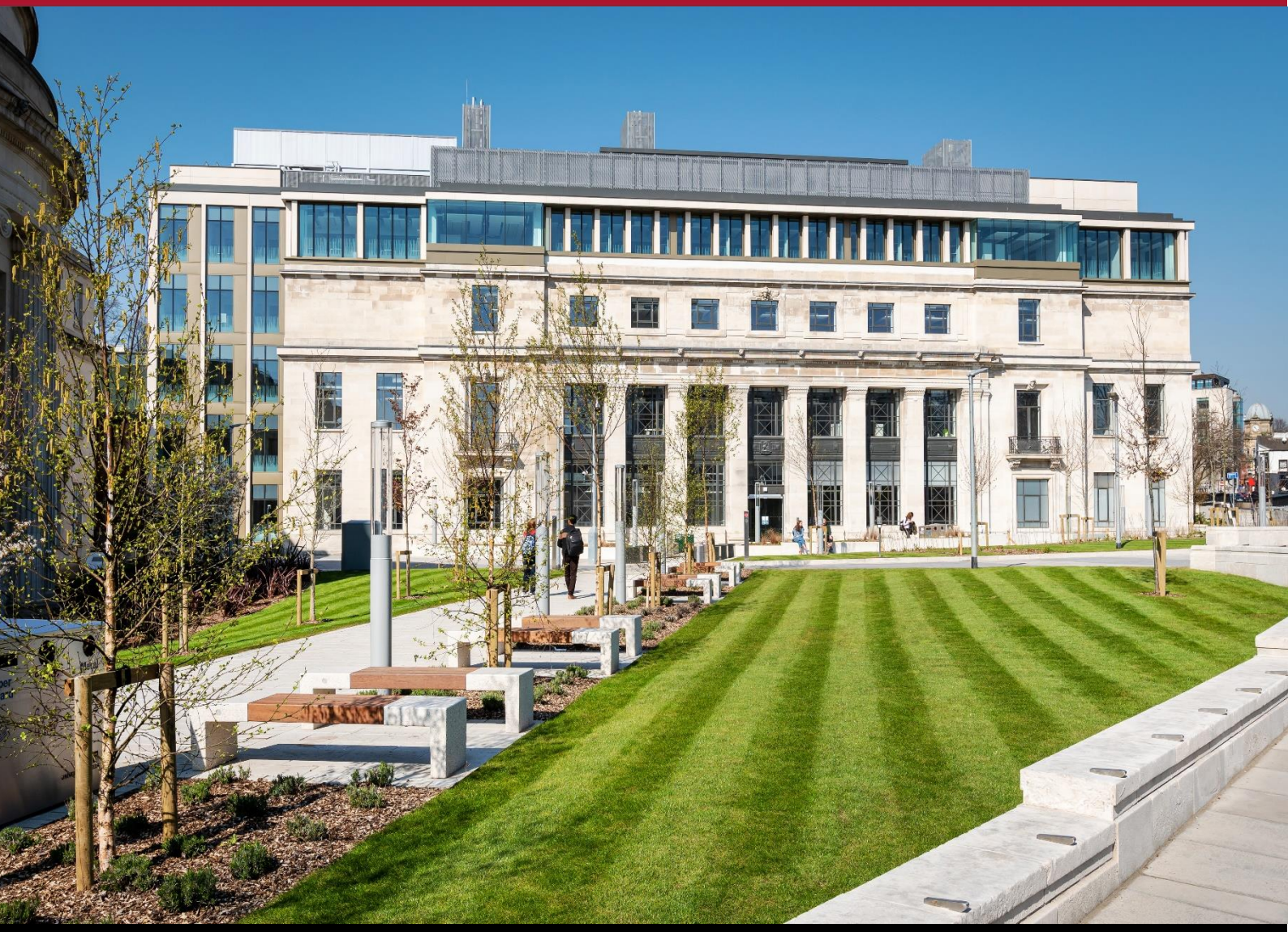
UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Artificial Intelligence,

Faculty of Engineering and Physical Sciences



Salary: Grade 7 (£38,205 – £45,585 p.a.)

Reference: EPSCP1158

Location: Leeds campus

Closing date: Monday 30 September 2024

Fixed-term until 30 November 2026

We are open to discussing flexible working arrangements

Research Fellow in Artificial Intelligence, School of Computing.

Are you a researcher interested in developing robots that can reason about the physics of the world i.e. how objects move when a robot interacts with them? Do you have an established background in robotic manipulation? Do you want to gain experience in one of the most important technologies of the future: robotic picking and packing systems in warehouses?

In this EPSRC-funded project, you will develop planning, control, and learning algorithms for robotic manipulators. These algorithms will reason about the physics of mixed multi-object systems (e.g. a mix of items in an online delivery box). You will investigate methods to efficiently predict/simulate/learn the physics of such multi-object systems. You will integrate robotic arms, grippers, suction cups, visual, force, and tactile sensors into a complete system that can use such physics-based predictions to perform real-world picking and packing operations.

You will be a leading researcher in Dr Mehmet Dogar's group focusing on physics-based robotic manipulation. You will have the opportunity to collaborate with our academic partners (including ETH Zurich, UC Berkeley, TU Hamburg, German Aerospace Agency and Bristol University) to develop the algorithms and systems and, test the developed approaches in real warehouse settings (our industrial partners include Amazon Robotics).

What does the role entail?

As a Research Fellow, your main duties will include:

- Developing algorithms for planning, control, and learning of robotic picking/packing tasks in mixed multi-object settings (e.g. online delivery);
- Working with, developing, or learning physics simulators that can make predictions about the motion of the mixed multi-object systems at different levels of accuracy and resolution;
- Working with, developing, or learning perception systems, that can track the multi-object system during robot operation, through the integration of visual, force, and tactile sensor data;
- Integrating robotic arms, grippers, and sensors into a complete system, which can then use the above algorithms;



- Testing such systems in real warehouses, in collaboration with our partners, to measure their real-world performance;
- Visiting our academic partners to receive collaborate and receive training;
- Organising academic workshops to contribute to the international discussion around physics-based manipulation;
- Organising industrial workshops to understand the industry's needs better in this area, and reporting on these industrial needs;
- 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 Robotics, Computer Science, Mechatronics, Applied Mathematics, Electronic and Electrical Engineering, Mechanical Engineering or a closely allied discipline;
- A strong background in robotic manipulation planning, control or learning;
- Hands-on experience of performing experiments with robotic manipulators;
- Strong programming experience using C++ and/or Python;
- 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 independently 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 with robot perception algorithms and systems;
- Experience with physics simulators, rigid-body mechanics and/or deformable-object modelling (e.g. mass-spring or finite-element models);
- Experience of integrating robotic hardware components into complete systems.

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 Mehmet Dogar, Associate Professor
Tel: +44 (0)113 343 5777
Email: M.R.Dogar@leeds.ac.uk

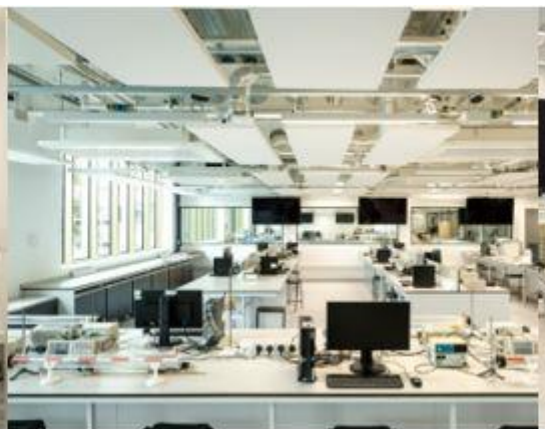
Additional information

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 Computing.

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.


Support for researchers
You will have the opportunity to use various resources provided by University of Leeds's Organisational Development and Professional Learning (ODPL) team. They are committed to promoting a positive and inclusive research culture and supporting our researchers to deliver research excellence. For example, ODPL provides career development programmes such as Fellowship Accelerator for PDRAs interested in taking next steps towards a fellowship application and Career Accelerator for helping researchers work towards their career goals in general. See https://researchersupport.leeds.ac.uk for more detail.

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

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: www.gov.uk/skilled-worker-visa.

For research and academic posts, we will consider eligibility under the Global Talent visa. For more information, please visit: https://www.gov.uk/global-talent.

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.