

## Summary

<b>Job title</b>	Postdoctoral Research Assistant in Robotics
<b>Division</b>	Mathematical, Physical and Life Sciences Division
<b>Department</b>	Engineering Science
<b>Location</b>	Institute of Biomedical Engineering, Old Road Campus Research Building, Headington, Oxford, OX3 7DQ
<b>Grade and salary</b>	Grade 7: £38,674 - £46,913 per annum
<b>Hours</b>	Full time
<b>Contract type</b>	Fixed-term for up to 12 months
<b>Reporting to</b>	Prof Liang He, Associate Professor in Engineering Science
<b>Vacancy reference</b>	180178
<b>Additional information</b>	Reimbursement of relocation costs for postdoctoral positions is only available where allowed on the project.

<b>Research topic</b>	Robotic testing and design of Personal Protection Equipment
<b>Principal Investigator / supervisor</b>	Professor Liang He
<b>Project web site</b>	<a href="http://www.ox.ac.uk/">www.ox.ac.uk/</a>
<b>Funding partner</b>	The funds supporting this research project are provided by Podium Analytics, an NGO dedicated to safety in youth sport.
<b>Recent publications</b>	

## The role

We are seeking to appoint a highly motivated Postdoctoral Research Assistant in Soft Robotics, to work within the recently established Podium Institute for Sports Medicine at the University of Oxford. The post is initially fixed term for 12 months and potentially extendable for longer subject to funding. The postholder will work under the supervision of Professor Liang He.

Established in October 2022, the Podium Institute sits within the Institute of Biomedical Engineering (IBME) in the University's Department of Engineering Science and is supported by a £25m 10-year donation to the University. It constitutes a world-unique ecosystem within which to develop and validate new technologies for the diagnosis, prevention, and management of sport injuries, with a



particular emphasis on safety rather than performance in the community and youth sport (11-18 years of age).

The participation of young people in sports has important physical and psychosocial health benefits, including greater self-esteem, motor skill development, socialisation, teamwork, competition, and stress reduction. Although it is often assumed that sports injuries are the results of ‘accidents’, they are often the result of circumstances that predictably lead to injuries. Unlike injuries occurring in adult elite sports, the largest proportion of injuries in young people occur at non-professional sporting events. This might lead to decreased sport participation, lower levels of physical activity and increased levels of obesity in adulthood, with an increased associated all-cause morbidity.

You will be part of an interdisciplinary team of pioneering researchers, with the primary aim to develop cutting-edge robotics and AI technologies that will revolutionize how we understand and respond to human behaviour in both real-time and long-term contexts. You will play a crucial role in the testing and design of novel personal protection equipment (PPE). Your responsibilities will encompass developing new robotic benchmarking testing setup, hardware and controller of a robotic mechanical impactor, and data acquisition system with integrated sensors.

Additionally, by being part of Professor He’s research group, you will have the chance of working in other areas of soft robotic research for healthcare applications with world-leading engineering and clinical teams who aim to have a real impact on individuals’ lives. You will help ensure healthy and vibrant research environment within The Podium Institute for Sports Medicine at the University of Oxford. This will involve leading, devising, coordinating, and supervising research projects in this area, including the work involved in the collaborations with project partners, guidance to researchers and students, and applying for further funding to underpin the research.

## Responsibilities

### Specific Duties

- Develop novel robotic benchmarking testing setup hardware and controller of a robotic mechanical impactor, and data acquisition system with integrated sensors.
- Research on the design/testing of innovative PPE (i.e., helmets) to prevent injury during physical activities.
- Coordinate and lead experiments within the lab and in the field.
- Test hypotheses and analyse scientific data from a variety of sources, reviewing and refining working hypotheses as appropriate.
- Contribute towards academic publications and patents.
- Keep informed of developments in the field of soft robotics and sports medicine and the application to the problem domain.
- Contribute to a team of post-doctoral research assistants and DPhil students within the research group, agreeing clear task objectives and delegating work to other team members as necessary.

### Additional Duties

- Interact with other research collaborators to provide input and suggestions on the design and development of new PPE.
- Manage own academic research and administrative activities. This involves small scale project management, to co-ordinate multiple aspects of work to meet deadlines
- Assist in developing, establishing, and pursuing appropriate analytical protocols and techniques to support research.
- Collaborate in the preparation of scientific reports and journal articles and occasionally present papers and posters.
- Act as a source of information and advice to other members of the group on specialist methodologies or procedures.
- Carry out collaborative projects with colleagues in partner institutions and research groups.
- The researcher may have the opportunity to undertake ad-hoc paid teaching (this includes lecturing, demonstrating, small-group teaching, tutoring of undergraduates and graduate students and supervision of masters projects in collaboration with principal investigators). Permission must be sought in advance for each opportunity.
- Develop ideas for generating research income, and present detailed research proposals to senior researchers
- Contribute ideas for new research projects
- Represent the research group at external meetings/seminars, either with other members of the group or alone.
- Any other duties appropriate with the role.

### Selection criteria

#### Essential selection criteria

- Hold a relevant PhD/DPhil or be near completion\* together with relevant experience in the field of robotics, biomedical engineering, information engineering, electrical engineering, computer science or other field relevant to the proposed area of research.
- Good track record of robotic publications/presentations in the field of healthcare.
- Possess sufficient specialist knowledge in mechatronics design and control.
- Ability to manage own academic research and associated activities
- Proven programming experience in Python, MATLAB or C/C++.
- Experience on programming microcontrollers for robotic devices.
- Excellent communication skills, including the ability to write for publication, present research proposals and results, and represent the research group at meetings.

- Ability to contribute ideas for new research projects and research income generation.

*\*please note that 'near completion' means that you must have submitted your PhD thesis.*

#### Desirable selection criteria

- Experience of independently managing a discrete area of a research project
- Experience of working on PPE for energy absorption or impact testing
- Experience of actively collaborating in the development of research articles for publication

#### Pre-employment screening

##### Standard checks

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

Please read the candidate notes on the University's pre-employment screening procedures at: <https://www.jobs.ox.ac.uk/pre-employment-checks>

#### About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford.

For more information, please visit [www.ox.ac.uk/about/organisation](http://www.ox.ac.uk/about/organisation).

#### Engineering Science Department

Engineering teaching and research takes place at Oxford in a unified Department of Engineering Science whose academic staff are committed to a common engineering foundation as well as to advanced work in their own specialties, which include most branches of the subject. We have especially strong links

with computer science, materials science, medicine and also the Saïd Business School. The Department employs 120 academic staff (this number includes 13 statutory professors appointed in the main branches of the discipline, and 25 full professors); in addition, there are nine visiting professors. There is an experienced team of teaching support staff, professional services and administrative staff and technicians. The Department has well-equipped laboratories and workshops, which together with offices, lecture theatres, library and other facilities have a net floor area of about 25,000 square metres.

The Department is ranked fifth in the world, and the top European University, in the 2023 *Times Higher Education World University Rankings* for Engineering & Technology. Further information about the Department is available at [www.eng.ox.ac.uk](http://www.eng.ox.ac.uk).

### Teaching

We aim to admit 170-180 undergraduates per year to take a 4-year course leading to the MEng degree in Engineering Science. The course is accredited at MEng level by the major engineering institutions. The syllabus has a common core extending through the first two years. Specialist options are introduced in the third year, and the fourth year includes further specialist material and a major project.

### Research

Research in the Department is particularly strong. We have approximately 600 research students and about 250 postdoctoral researchers. Direct funding of research grants and contracts, from a variety of sources, amounts to an annual turnover of approximately £70m.

The results of the seven-yearly UK-wide assessment of university research, REF2021, published on 12<sup>th</sup> May 2022, demonstrate that the University of Oxford made the highest volume of world-leading research submissions. The Department of Engineering Science had 71% of submissions which met the requirements for the highest grading of 4\* (research that is world-leading in terms of originality, significance, and rigour).

Research activities fall into 8 broad headings, though there is much overlapping in practice: Information Engineering (Robotics, Computer Vision and Machine Learning); Control; Thermofluids; Materials and Mechanics; Civil and Offshore; Electrical and Optoelectronic; Chemical and Process; and Biomedical.

The Department of Engineering Science holds a bronze Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

### The Mathematical, Physical, and Life Sciences Division

The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University. In the results of the six-yearly UK-wide assessment of university research, REF2014, the MPLS division received the highest overall grade point average (GPA) and the highest GPA for outputs. We received the highest proportion of 4\* outputs, and the highest proportion of 4\* activity overall. More than 50 per cent of MPLS activity was assessed as world leading.

The MPLS Division's 10 departments and 3 interdisciplinary units span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our research addresses major societal and technological challenges and is increasingly focused on key interdisciplinary issues. MPLS is proud to be the home of some of the most creative and innovative scientific thinkers and leaders working in academe. We have a strong tradition of attracting and nurturing the very best early career researchers who regularly secure prestigious fellowships

We have around 6,000 students and play a major role in training the next generation of leading scientists. Oxford's international reputation for excellence in teaching is reflected in its position at the top of the major league tables and subject assessments.

MPLS is dedicated to bringing the wonder and potential of science to the attention of audiences far beyond the world of academia. We have a strong commitment to supporting public engagement in science through initiatives including the Oxford Sparks portal (<http://www.oxfordsparks.net/>) and a large variety of outreach activities. We also endeavour to bring the potential of our scientific efforts forward for practical and beneficial application to the real world and our desire is to link our best scientific minds with industry and public policy makers.

For more information about the MPLS division, please visit: <http://www.mpls.ox.ac.uk/>

### How to apply

Applications are made through our online recruitment portal. Information about how to apply is available on our Jobs website <https://www.jobs.ox.ac.uk/how-to-apply>.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application you will be asked to provide details of two referees and indicate whether we can contact them now.

You will be asked to upload a CV and a supporting statement. The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants)

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time on the closing date stated in the online advertisement.

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### Information for priority candidates

A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing department(s).

If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments).

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### If you need help

Application FAQs, including technical troubleshooting advice is available at: <https://staff.web.ox.ac.uk/recruitment-support-faqs>

Non-technical questions about this job should be addressed to the recruiting department directly: [recruitment@eng.ox.ac.uk](mailto:recruitment@eng.ox.ac.uk)

To return to the online application at any stage, please go to: [www.recruit.ox.ac.uk](http://www.recruit.ox.ac.uk).

Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.

## Important information for candidates

### Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at:

<https://compliance.admin.ox.ac.uk/job-applicant-privacy-policy>. The University's Policy on Data Protection is available at: <https://compliance.admin.ox.ac.uk/data-protection-policy>.

### The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82**, which with effect from 1 October 2023 will be 30 September before the 70<sup>th</sup> birthday. The justification for this is explained at:

<https://hr.admin.ox.ac.uk/the-ejra>.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: <https://hr.admin.ox.ac.uk/the-ejra>.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

### Equality of opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

## Benefits of working at the University

### Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See <https://hr.admin.ox.ac.uk/staff-benefits>

### University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See [www.club.ox.ac.uk](http://www.club.ox.ac.uk) and <https://www.sport.ox.ac.uk/>.

### Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See <https://welcome.ox.ac.uk/>

There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependents. See <https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme>

### Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to the Work+Family Space, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See <https://hr.admin.ox.ac.uk/my-family-care>

The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries.

For full details, including how to apply and the costs, see <https://childcare.admin.ox.ac.uk/>

### Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see <https://edu.admin.ox.ac.uk/disability-support>

### Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at <https://edu.admin.ox.ac.uk/networks>

### The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See [www.newcomers.ox.ac.uk](http://www.newcomers.ox.ac.uk).