UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in 3D Scanning of Railways,

Faculty of Engineering and Physical Sciences

Salary: Grade 7 (£37,099 to £44,263 p.a.) Due to funding restrictions, an appointment will not be made higher than £39,347 p.a.

Reference: EPSCV1138

Location: University Campus (with scope for hybrid working)

Closing date: Tuesday 09 July 2024

Fixed term for 24 months, to end by 30 April 2027

We are open to discussing flexible working arrangements

Research Fellow in 3D Scanning of Railways, School of Civil Engineering.

Are you an ambitious researcher looking for your next challenge? Do you have experience related to 3D scanning, point cloud data processing or railways? Do you want to further your career in one of the UK's leading research-intensive Universities? Do you want to be part of an EU funded international innovation programme with collaboration between partners across Europe?

We seek a motivated and versatile Research Fellow to help develop novel 3D scanning technologies for railway track Switches and Crossings. You will be working on the XCROSS project which aims to make a step-change in railway maintenance. As part of this, you will work with an international consortium comprising a range of leading Universities, software companies, sensor companies, railway track owners and rail industry bodies.

Working with Professor David Connolly, you will conduct novel research and international impact activities. This will include the identification of hardware and software requirements for the in-situ 3D scanning of crossings, and also performing laser scans at several railway sites in Europe. Using scan data, you will develop 3D point cloud manipulation, artificial intelligence, and computer vision algorithms to process 3D scanned crossing datasets.

You will have a PhD (or submitted your thesis before taking up the role) in a railway engineering related discipline or an area related to 3D scanning or computer vision.

What does the role entail?

As a Research Fellow, your main duties will include:

- Designing and delivering original research related to the 3D scanning of railway Switches and Crossings. This may include processing point cloud data and developing machine learning algorithms;
- Collaborating and assisting with the delivery of related project research tasks led by other partners. These may include: 3D printing, augmented reality, sensing and numerical simulation;
- Field testing of developed research in the laboratory and on railway lines;
- Conducting literature reviews and collating data and compiling datasets;


- Contributing to data management within the project and preparing, with guidance, other project deliverables and presentations in a timely manner;
- Presenting work at project meetings and conferences nationally and internationally as required;
- 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.

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 a railway engineering related discipline or an area related to 3D scanning or computer vision;
- Excellent analytical skills, with the ability to interpret and manipulate large datasets;
- Strong coding experience, preferably with MATLAB 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 of processing 3D point cloud data for railway applications;
- Experience of machine learning or computer vision.

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:

Professor David Connolly
Email: D.Connolly@leeds.ac.uk

Additional information

Please note: If you are not a British or Irish citizen, you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.

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 Civil 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.