



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Digital Train Control and Traffic Management –
Dynamic Simulation Modelling, Faculty of Environment



Salary: Grade 7 (£33,797 – £40,322 p.a.)

Reference: ENVTR1110

Closing date: 1 December 2019

Fixed-term for 36 months

Research Fellow in Digital Train Control and Traffic Management – Dynamic Simulation Modelling

Institute for Transport Studies, University of Leeds

Are you an ambitious researcher looking for your next challenge? Do you want to further your career in one of the UK's leading research-intensive Universities? Do you have experience in railway signalling and train control, network simulation and optimisation modelling?

The University of Leeds along with external partners are investing over £60 Million in the establishment of a new high speed rail (HSR) institute. A 10-acre site is being developed as a Rail Engineering/Technology campus, primarily for HSR research and innovation. This post is funded as part of the initiative, with a focus on establishing the fundamental principles and proofs of concept for the optimisation of digital railway signalling and train controls, and network-wide traffic management.

You will be highly motivated, enthusiastic, and have strong analytical and computational, as well as communication skills. You will be able to demonstrate an established track record of high-quality and innovative research activity around network simulation modelling, railway operations and control, and an excellent academic potential to develop modelling and decision support tools for digital railway to increase capacity, reduce delay and cost, improve sustainability, and enhance safety and reliability.

You will be responsible for developing a computer-based railway network simulation model for railway networks and train operation, and working with our industry partners in designing and testing new digital signalling, train control, and timetable solutions.

With a PhD in Engineering, Transport, Computer Science, or Mathematics, or a closely allied discipline you will have a strong foundation in scientific programming, network modelling, optimisation, and/or control theory.



What does the role entail?

As a Research Fellow, your main duties will include:

- Play an active role in the research and development activities related to the project, and collaborating with and supporting [Professor Ronghui Liu](#) on the research project to help ensure the successful attainment of project goals;
- Generating and pursuing independent and original research ideas in the appropriate subject area;
- Develop and implement computer simulation and optimisation algorithms to model the digital railway solutions and implement to an existing simulation framework;
- Evaluating methods and techniques used and results obtained by other researchers and to relate such evaluations appropriately to your own work;
- Interacting and collaborating with industry partners, to consider the latest industrial digital railway initiatives in the model development and testing, and to maximise research impact by reporting key results back to industry;
- Contributing to the analysis and presentations of key developments from the projects at regular workshops to the industry stakeholders;
- Preparing presentations for conferences, papers for publication in leading international journals and writing reports;
- Working both independently and as part of the day-to-day activities of a larger team of researchers;
- Maintaining your own continuing professional development, contributing to the research culture of the [Institute for Transport Studies](#).

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 near completion - i.e. the initial thesis needs to have been handed in at the point of application) in Engineering, Transport, Computer Science or Mathematics, or a closely allied discipline;



- Ability to write high quality research papers and able to demonstrate a developing track record of peer-reviewed publications in leading academic journals;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- A proven track record of high quality literature review and synthesis;
- Evidence of innovation in research;
- Ability to work independently and flexibly as well as accurately and carefully;
- Ability to meet deadlines and maintain a professional approach to all aspects of the role;
- Ability to work as part of a team as well as autonomously;
- Excellent IT skills and computer programming experience, e.g. C/C++, MatLab;
- Excellent written and verbal communication skills including presentation skills;
- A strong commitment to your own continuous professional development.

You may also have:

- Experience in simulation modelling and applications of optimisation algorithms;
- Knowledge of railway engineering and train operations;
- Experience in participatory and interdisciplinary research;
- Evidence of contributions to research proposals.

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:

Prof Ronghui Liu, Professor of Networks and Transport Operations

Tel: +44(0) 113 3435338

Email: r.liu@its.leeds.ac.uk



Additional information

Find out more about the [Faculty](#) and our [Institute](#).

Find out more about our [Research and associated facilities](#).

Find out more about Equality and Inclusion and Athena Swan in the [Faculty](#) and the [University](#).

Working at Leeds

Find out more about the benefits of working at the University and what it is like to live and work in the Leeds area on our [Working at Leeds](#) information page.

Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at disclosure@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.

