



UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Design and Implementation of Next Generation Networks for Railway, Faculty of Engineering & Physical Science



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

Reference: EPSEE1004

Closing date: 17 November 2019

Two fixed-term roles are available, one for three years and one for two years

We will consider flexible working arrangements

Research Fellow in Design and Implementation of Next Generation Networks for Railway, School of Electronic and Electrical Engineering

Are you an ambitious researcher looking for your next challenge? Do you have an established background in the area of modern cellular wireless networks? Do you want to further your career in one of the UKs leading research intensive Universities?

The University of Leeds along with external partners is investing around £60 Million in establishment of a new high speed rail institute. A 10 acre site is being developed as a Rail Engineering/Technology campus, primarily for HSR research and including a “systems integration” centre in which School of Electronics and Electrical Engineering is contributing significantly.

This post is funded by our industrial partners to develop innovative solutions which exploit 5G wireless technologies to provision monitoring and proactive repairs for critical high speed rail infrastructure.

You will have a PhD (or close to completion) in Electronics and Electrical Engineering or a closely allied discipline, with a strong background in wireless communication and networking, and hands on experience in prototyping radio communication solutions using software-defined radio and IoT.

What does the role entail?

As a Research Fellow, your main duties will include:

- Implement and prototype novel 5G cellular solutions specifically geared towards railway systems;
- Implement OpenAirInterface and work along TelecomInfra initiative to enable integration of open source 5G ecosystem with European Rail Traffic Management System (ERTMS);
- Extend OpenAirInterface 3GPP release 15/16 for self-optimization of radio interface for Internet-of-Things applications;
- Incorporate Machine Learning and Optimization methods into radio access networks (RAN) for outage and anomaly detection;



- 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 work;
- Preparing papers for publication in leading international journals and disseminating research results through other recognised forms of output;
- Working both independently and also as part of a larger team of researchers, engaging in knowledge-transfer activities where appropriate and feasible;
- 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 close to completion) in Electronics and Electrical Engineering or a closely allied discipline;
- A strong background in wireless communication and networking;
- Hands on experience in prototyping radio communication solutions using software-defined radio and IoT;
- A strong background in programming and signal processing;
- Understanding of modern cellular network architecture and familiarity with software defined networking and network function virtualisation;
- Familiarity with optimization techniques and tools including mixed integer linear programming, metaheuristics, dynamic programming and convex optimization;
- Good time management and planning skills, with the ability to meet tight deadlines and work effectively under pressure;



- A proven track record of peer-reviewed publications in high impact factor journals;
- Excellent written and verbal communication skills including presentation skills;
- Proven ability to manage competing demands effectively, responsibly and without close support;
- A proven ability to work well both individually 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 Machine Learning and relevant programming frameworks such as TensorFlow, Keras and Numpy;
- Experience with GNU Radio and SDR programming;
- Experience with network orchestration, e.g. using FlexRAN.

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 Andy Kemp](#), Professor of Communications

Tel: +44 (0)113 343 32078

Email: A.H.Kemp@leeds.ac.uk

Additional information

Faculty and School Information

Further information is available on the research and teaching activities of the School of [School of Electronic and Electrical Engineering](#).



A diverse workforce

The Schools in the Faculty of Engineering & Physical Sciences are proud to have been awarded the Athena SWAN [Bronze](#) or [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

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.

