



Candidate Information

Position:	Research Fellow
School/Department:	Centre for Wireless Innovation
Reference:	23/111497
Closing Date:	Monday 8 January 2024
Salary:	£37,841 per annum
Anticipated Interview Date:	Thursday 18 January 2024
Duration:	13 months or until 28 February 2025, whichever is sooner

JOB PURPOSE:

To be a highly productive, ambitious and collaborative member of the £12m project "Realising Enabling Architectures and Solutions for Open Networks (REASON)", funded by the Department for Science, Innovation & Technology (DSIT).

Assist in the creation of signal processing and algorithm development for a new generation of electromagnetic signal propagation manipulating tools, such as Reconfigurable Intelligent Surfaces (RISs) and Reconfigurable Intelligent Edges (RIEs). Become an active member of the Centre for Wireless Innovation and the School of EEECS at QUB, assisting in the production of world leading research output

MAJOR DUTIES:

1. Formulate new signal processing techniques and algorithms for emerging propagation manipulating tools such as RIS and RIE.
2. Carry out the simulations of the signal processing techniques and algorithms using appropriate software e.g. MATLAB, Python etc.
3. Optimise algorithms for real-time processing and resource-constrained embedded devices.
4. Develop embedded platform to control RIS and RIE prototypes, and implement signal processing techniques and algorithms on the devices.
5. Assist with the development of RIS and RIE based demonstrators.
6. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to the proposed research topic.
7. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
8. Prepare, often in consultation with the supervisor, material for publication in national and international journals and presentations at international conferences.
9. Assist grant holders in the preparation of funding proposals and applications to external bodies.
10. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget.
11. Carry out occasional undergraduate (final year, MEng) project supervision, demonstrating or lecturing duties within the post holder's area of expertise and under the direct guidance of a member of the academic staff.

ESSENTIAL CRITERIA:

1. Have, or be about to obtain, a PhD in Electronics, Electrical Engineering, or closely related discipline.
2. Recent, relevant research experience in EM related signal processing or associated area.
3. Experience in designing signal processing algorithms, real-time algorithm implementation and code acceleration techniques.
4. Evidence of strong publication record commensurate with stage of career.
5. Demonstrable ability to:
 - contribute to research management and administrative processes.
 - contribute to the School's outreach programme by links with industry, community groups etc.

6. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
7. Strong communication skills with a demonstrable ability to communicate complex information clearly.
8. Proven ability to build contacts and participate in internal and external networks.
9. Ability to travel and present at project meetings, and international conferences.

DESIRABLE CRITERIA:

1. Able to demonstrate:
 - Experience with reconfigurable intelligent surfaces or metasurfaces or similar.
 - Familiarity with other applications of RIS & metasurface such as EM imaging
 - Experience in using design and simulation software, such as MATLAB and Python.
 - Experience with embedded systems development e.g. FPGAs, SDRs, microcontrollers.
 - Experience with code development on GPUs using CUDA C or similar.
 - Experience with computational EM techniques, such as FEM or similar.
2. Experience in:
 - EU or RCUK projects, in particular in project task management and reporting through periodic deliverables.
3. Experience in producing timely technical documentation on research projects (deliverables, reports).
4. Experience with presentations of research outputs in conferences, workshops, or seminars.