Candidate Information

Position: Research Fellow in Machine Learning for 6G Cell-Free Massive MIMO
School/Department: Centre for Wireless Innovation
Reference: 24/112312
Closing Date: Monday 20 January 2025
Salary: £39,922 per annum
Anticipated Interview Date: Thursday 30 January 2025
Duration: 24 months

JOB PURPOSE:

To contribute to the project, funded by the Department for the Economy Northern Ireland under the US-Ireland R&D Partnership Programme, entitled "Enabling Beyond-5G Wireless Access Networks with Robust and Scalable Cell-Free Massive MIMO", by developing novel machinelearning algorithms and architectures for scalable and robust cell-free massive MIMO systems. The successful candidate will mainly focus on using signal processing, optimization, and machine learning techniques to design energy efficient cell-free massive MIMO. The candidate will become active members of the Centre for Wireless Innovation and the School of EEECS at QUB, assisting in the production of world leading research output and the development of new research initiatives in the broader area of cell-free massive MIMO research.

MAJOR DUTIES:

1. Propose new system designs and resource allocation schemes to improve the performance cellfree massive MIMO. The design includes signal processing, optimization, and machine learning algorithms aimed at improving the energy efficiency and reducing the system complexity.
2. Apply the new designs to integrate cell-free massive MIMO with other advanced technologies such as reconfigurable intelligent surface and integrated sensing and communications.
3. Develop and plan an area of personal research and expertise, and/or undertake research under supervision within a specific research project or as a member of a research team.
4. Work closely with all project collaborators, attend project meetings and cross-leverage their complimentary expertise.
5. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to experimental computing systems research.
6. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
7. Prepare, often in consultation with the supervisor, material for publication in national and international journals and presentations at international conferences.
8. Assist grant holder in the preparation of funding proposals and applications to external bodies.
9. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget.
10. 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 academic staff.
11. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.

ESSENTIAL CRITERIA:

1. Have, or be about to obtain (completed within three months of application) a in Electronics, Electrical Engineering, or closely related discipline.

2. Recent, relevant research experience to include:

   - Evidence of strong background in wireless communications and signal processing for MU-MIMO or massive MIMO;

   - Demonstrable experience applying machine learning technologies/techniques for wireless communications;

   - Demonstrable specialist knowledge in the discipline and of research methods and techniques to work within established research programmes;

   - Evidence of strong publication record commensurate with stage of career.

3. Evidence of contributing to research management and administrative processes.

4. Proven ability to communicate complex information clearly.

5. Proven ability to build contacts and participate in internal and external networks.

6. Ability to assess and organise resources.

DESIRABLE CRITERIA:

1. At least 2:1 honours degree in Electronics, Electrical Engineering, or closely related discipline.

2. Experience in producing timely technical documentation on research projects (deliverables, reports).

3. Experience in research projects, in particular in project task management and reporting through periodic deliverables.

4. Experience working with external industrial or academic partners.

5. Experience with presentations of research outputs in conferences, workshops, or seminars.