



Candidate Information

Position:	Research Fellow
School/Department:	School of Electronics, Electrical Engineering and Computer Science
Reference:	18/106948
Closing Date:	Monday 3 December 2018
Salary:	£33,199 - £39,610 per annum (potential to progress to £43,266 per annum through sustained exceptional contribution)
Anticipated Interview Date:	Wednesday 09 January 2019
Duration:	Available for 17 months (extension possible pending approval from funder)

JOB PURPOSE:

To contribute to the project, funded by the Engineering and Physical Sciences Research Council (EPSRC), entitled 'Low-cost processing for mm-wave massive MIMO' by developing novel theoretical and practical solutions for reducing the power consumption and implementation/fabrication cost of mm-wave massive MIMO topologies. The successful candidates will work closely with our project partners in the UK, US, and Europe. The candidates will also 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 massive MIMO research.

MAJOR DUTIES:

1. Design novel, low-complexity subarray hybrid precoding techniques suitable for mm-wave massive MIMO systems to reduce the power consumption of digital signal processing.
2. Analyse theoretically the spectral efficiency/energy efficiency of the proposed solutions using realistic power consumption models.
3. Perform joint transceiver design to account for analogue and digital decoding.
4. Investigate the impact of phase quantisation and electromagnetic mutual coupling on the performance of subarray topologies.
5. Evaluate the performance of the proposed solutions in MATLAB, SIMULINK.
6. 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.
7. Work closely with all project partners, attend project meetings and cross-leverage their complimentary expertise.
8. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to experimental computing systems research.
9. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
10. Prepare, often in consultation with the supervisor, material for publication in national and international journals and presentations at international conferences.
11. Assist grant holder in the preparation of funding proposals and applications to external bodies.
12. Carry out routine administrative tasks associated with the research project/s to ensure that project/s are completed on time and within budget.
13. 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.
14. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.

Planning and Organising:

1. Plan for the use of research resources, laboratories and workshops where appropriate.
2. Plan own day-to day activity within framework of the agreed research programme.
3. Plan in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
4. Coordinate and liaise with other project partners over work progress.

Resource Management Responsibilities:

1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance as required to support staff and any students who may be assisting with research.

Internal and External Relationships:

1. Liaise on a regular basis with colleagues and students in the Centre for Wireless Innovation, the School of EECS and faculties in Queen's University Belfast to build research collaborations.
2. Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
3. Join external networks to share information and ideas.

ESSENTIAL CRITERIA:

1. Have (or about to be awarded in the next 3 months) a PhD in Electronics, Electrical Engineering, or closely related discipline.
2. At least 2:1 honours degree in Electronics, Electrical Engineering, or closely related discipline.
3. At least 3 years research experience in signal processing and real time implementation for wireless communications.
4. Ability to contribute to research management and administrative processes.
5. 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. Ability to communicate complex information clearly.
8. Ability to build contacts and participate in internal and external networks.
9. Demonstrable intellectual ability.
10. Ability to assess and organise resources.
11. Ability to travel and present at project meetings, and international conferences, willing to have 3 month secondment overseas.

DESIRABLE CRITERIA:

1. Strong background in communication theory and signal processing for MIMO wireless communications.
2. Experience in EU or RCUK projects, in particular in project task management and reporting through periodic deliverables. Experience working with external industrial or academic partners.
3. Experience in producing timely technical documentation on research projects (deliverables, reports).
4. Experience with presentations of research outputs in conferences, workshops, or seminars.