Candidate Information

Position:	Research Fellow
School/Department:	Centre for Wireless Innovation
Reference:	22/109851
Closing Date:	Monday 6 June 2022
Salary:	£34,304 - £36,382 per annum
Anticipated Interview Date:	Tuesday 21 June 2022
Duration:	Fixed Term – 3 years

JOB PURPOSE:

Design and implementation of antennas and RF system hardware for near-field millimetre-wave imaging applications. This will be carried out as part of a research team, within an exciting project funded by the Leverhulme Trust, aiming to develop real-time compressive radars for security-screening applications. This is a unique opportunity to build the next generation millimetre-wave radar systems and work at one of the leading institutions in the United Kingdom in millimetre-wave technology, Centre for Wireless Innovation (CWI), Queen's University Belfast, collaborating with an international team of academics and industry.

The post is a critical role, and as such, successful applicants will have responsibilities in independent research, supervision, planning, day to day lab management, collaborations, and outreach.

MAJOR DUTIES:

1. Develop, simulate and measure millimetre-wave antennas and metasurfaces, and investigate sparse radar aperture layouts for computational imaging.
2. Design and develop radar hardware and systems for millimetre-wave imaging.
3. Develop hardware solutions to achieve real-time radar measurements and data acquisition.
4. Contribute to research on developing radar signal processing algorithms based on techniques such as back-projection, matched-filtering, range migration, coincidence imaging, etc.
5. Liaise with others in the research team to carry out system integration and RF hardware design for near-field radar systems.
6. As part of a research team, verify the operation of the overall radar system by simulations and measurements.
7. Present regular progress reports to members of the research team.
8. Prepare, in consultation with line manager, material for publication in prestigious leading journals and presentations at major international conferences to disseminate and publicise research findings.
9. Identify new funding opportunities and assist in the preparation of funding proposals.
10. Carry out, if required, occasional undergraduate and postgraduate supervisions, within the post holder's area of expertise and under the direct guidance of a member of academic staff.
11. Carry out administrative tasks associated with the research project to ensure that project is completed on time and within budget, including organisation of project meetings and documentation, risk assessment of research activities, etc.
12. Keep abreast of new developments in own specialism and related research areas/disciplines.

ESSENTIAL CRITERIA:

1. At least a 2.1 undergraduate's degree in electrical/electronic engineering or physics.
2. Hold or be about to obtain (within 3 months) a PhD in a relevant subject.

3. At least 3 years research experience which includes demonstrable experience in all of the following areas:
   • RF hardware and antenna design & implementation for radar systems and imaging.
   • Radar systems and/or computational imaging and/or compressive sensing.
   • Conducting measurements and characterisation of RF devices and circuits using measurement equipment such as vector network analysers and power meters, etc. Using full-wave electromagnetic design and simulation software such as, CST Microwave Studio.
   • Using MATLAB and / or Python and / or any other numerical environment.
4. A publication record in line with stage of career in prestigious leading journals (e.g. IEEE Transactions, IET, etc) and presentations at major international conferences.
5. Ability to contribute to broader management and administrative processes.
6. Contribute to the School's outreach programme by links with industry, community groups etc.
7. Willingness to undertake additional training in research methods and other related skills as required.
8. Practical problem solving skills, independence of thought and initiative.
9. Ability to build contacts and participate in internal and external networks.
10. Ability to communicate complex information clearly and effectively in oral and written format.
11. Ability to assess and organise resources.
12. Ability to meet the mobility requirements of the post, i.e. an ability and willingness to travel to attend meetings with industry partner and conferences where applicable.

DESIRABLE CRITERIA:

1. A master's degree in a relevant subject.
2. Experience of sparse/thinned antenna arrays.
3. Performed work relevant to near-field antenna measurements.
4. Coding radar problems and implementing algorithms on target hardware.
5. Experience of programming with parallel computing architectures, such as FPGAs and GPUs. Previous real-time radar signal processing experience is highly desirable.
6. Experience in managing a research project.
7. Experience in writing a funding proposal.