Candidate Information

Position: Research Fellow in Chirp Sonar Project
School/Department: Centre for Wireless Innovation
Reference: 21/109406
Closing Date: Friday 17 December 2021
Salary: £34,304 - £40,927 per annum
Anticipated Interview Date: Monday 6 December 2021
Duration: Available until 31 January 2024

JOB PURPOSE:

To play a key role in the UKRI-funded Artemis Chirp Sonar Research Project within the Centre for Wireless Innovation (CWI). The project aims to design, verify and implement the next-generation high-resolution chirp sonar for underwater imaging. The Research Fellow will work closely with other CWI team members and industrial collaborators to design sonar hardware and software, evaluate and optimise sonar performance in the laboratory and on a hydrofoil vessel.

MAJOR DUTIES:

1. Contribute to the sonar system-level architecture development defined by the sonar performance requirements and overall vessel design constraints.
2. Model sonar performance characteristics such as spatial resolution and obstacle classification using acoustic wave theory and suitable computational tools.
3. Propose system architectures and concepts capable of meeting performance requirements and assess these against criteria agreed with the team members and other stakeholders.
4. Design analog and digital hardware using appropriate modeling tools, such as Keysight Advanced Design System, simulate and optimise sonar hardware performance.
5. Contribute to the software development for real-time control of embedded systems.
6. Participate in sonar design verification and system integration test activities.
7. Promote quality hardware and software development practices across the research and development teams.
8. Ensure reliable delivery of projects via effective planning, monitoring, and control.
9. Produce high-quality technical reports and deliverables associated with the overall project management.
10. Help develop the international reputation of CWI through presentations, attendance at trade shows, and innovation events worldwide.
11. Contribute to the production of research reports, publications, and proposals.
12. 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.

Planning and Organising:

1. Plan for specific aspects of research programmes. Timescales range from 1-6 months in advance and contribute to research group planning.
2. Plan for the use of research resources, laboratories and workshops where appropriate.
3. Plan own day-to day activity within the framework of the agreed research programme.
4. Plan up to a year in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
5. Coordinate and liaise with other members of the research group 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, support staff and students on routine and project-specific matters.
2. Build internal and external contacts and participate in relevant networks for the exchange of information and to form relationships for future collaboration.
3. Contribute to the School's outreach programme by establishing links with industries.
4. Attend and contribute to relevant meetings.
5. Attend regular project meetings with project collaborators as and when needed.

ESSENTIAL CRITERIA:

1. Minimum of 2:1 Honours degree in Electrical and Electronic Engineering/Computer Science (or related discipline).
2. Have or be about obtain a PhD in a relevant area related to research activity.
3. 3 years recent relevant research experience.
4. Proven expertise in the design of analog and digital electronic circuits, application of integrated circuits, microcontrollers and FPGA.
5. Ability to contribute to broader management and administrative processes.
6. Contribute to the School's outreach programme by links with industrial partners, community groups etc.
7. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
8. Evidence of knowledge in the area of electronics and embedded systems design.
9. Ability to communicate complex information clearly.
10. Ability to build contacts and participate in internal and external networks.
11. Demonstrable intellectual ability.
12. Ability to assess and organise resources.

DESIRABLE CRITERIA:

1. Demonstrable experience in radar or sonar systems design and verification.
2. Proven expertise in real-time embedded systems design and FPGA applications.
3. Demonstrable experience in mathematical methods and programming languages such as C/C++.
4. Demonstrable experience in using simulation tools, such as Keysight Advanced Design System, CST.
5. Demonstrable experience in hardware description languages (VHDL or other).