Candidate Information

Position:	Research Fellow
School/Department:	Mechanical & Manufacturing Engineering
Reference:	23/111340
Closing Date:	Monday 30 October 2023
Salary:	£37,841 - £40,134 per annum
Anticipated Interview Date:	Week commencing 13 November 2023
Duration:	Fixed term for 36 months or until 30 November 2026, whichever is sooner

JOB PURPOSE:

To be a highly productive and ambitious member of the Queen's University Belfast and Rolls-Royce collaborative research team, investigating and using computational simulation methods to support structural design of next generation engine and aircraft concepts.

Successful applicants will have responsibilities in independent research, collaborating with the QUB team, and outreach. Direct collaboration with Rolls-Royce will be a key aspect of the role, including regular visits to the company's state of the art facilities in the UK.

MAJOR DUTIES:

1. Undertake independent research as a member of the research team.
2. Design, develop and refine research using a range of structural computational design and simulation tools. This includes:
   • Research and develop automated tools to generate structural models of aircraft powerplant components.
   • Use structural simulation to understand and quantify the sensitivity of aircraft structural design to new engine concepts and the sensitivity of engine structural design to new aircraft and powerplant configurations.
   • Develop tools for computing loads on a range of aircraft in different operational scenarios.
3. Carry out analyses, critical evaluations, and interpretations of experimental data and the literature using methodologies and other techniques appropriate to area of research.
4. Produce high quality research outputs consistent with project aims and commensurate with career stage. This will include collaborating and co-authoring with the project team (as appropriate) on outputs.
5. In consultation with the project team, promote research milestones and outputs at national and international conferences.
6. Assist grant holder in the preparation of funding proposals and applications to external bodies.
7. Carry out occasional educational supervision, demonstrating or lecturing duties within the post holder's area of expertise and under the direct guidance of a member of academic staff.
8. Undertake supplementary duties relevant to the success of the project including administrative duties and additional training and development activities as required.

ESSENTIAL CRITERIA:

1. Normally have or be about to obtain a relevant PhD in Engineering, Science or related discipline.
2. 2:1 or higher degree in Aerospace Engineering, Mechanical Engineering or related science.
3. Recent relevant research/industrial experience to include:
   • Demonstrable experience in the use of Finite Element Analysis for the design, optimisation or verification of structures.
   • Demonstrable experience in programming/scripting, beyond that taught in undergraduate engineering courses.
   • A proven track record of using relevant techniques to carry out analyses, critical evaluations, and interpretations of data as relevant to the research project.
   • Working effectively as part of a research team in the development and promotion of the research theme.
4. Ability to contribute to broader management and administrative processes.
5. Contribute to the School's outreach programme by links with industry, community groups etc.

6. Practical problem solving skills, independence of thought and initiative.
7. Ability to assess and organise resources.
8. Ability to communicate complex information in English effectively in oral and written format, including an ability to present at boardroom level.
9. Ability to build relationships to develop internal and external networks.
10. Commitment to continuous professional development.
11. Ability to meet the mobility requirements of the post including willingness to travel to partner facilities on a regular and frequent basis as required by the role.
12. Willingness to undergo a security check which must be passed.

DESIRABLE CRITERIA:

1. Experience of working in an industrial aerospace setting.
2. Demonstrable experience in:
   - The use of Finite Element Analysis for the design, optimisation or verification of aerospace structures.
   - Automation of simulation methods, or the creation of iterative analysis or optimisation frameworks.
   - Programming/scripting for relevant CAD/CAE software.
   - Working with industry (or in industry) on research programmes.
3. A track record of high quality publications appropriate to stage in career.