Candidate Information

Position:	Research Fellow VALIANT (Modelling Methods for Structural Analysis)
School/Department:	Mechanical & Manufacturing Engineering
Reference:	22/109942
Closing Date:	Monday 4 July 2022
Salary:	£34,304 per annum
Anticipated Interview Date:	Monday 25th July 2022
Duration:	Full time, Fixed- term, approx. 14 months

JOB PURPOSE:

To be a highly productive, ambitious and collaborative member of the Queen's University Belfast and Rolls-Royce collaborative Valiant research project/team. To investigate novel structural modelling strategies, using finite element analysis, for next generation aircraft and engine structural design. To assist in the development of research proposals and the planning and delivery of the research activity focusing on structural analysis and design for future engine and aircraft concepts.

The post is a critical role, and as such, successful applicants will have responsibilities in independent research, collaborating with the team, and outreach. Direct collaboration with Rolls-Royce will be a key aspect of the role with regular visits to the company's state of the art facilities in the UK.

MAJOR DUTIES:

1. Undertake research under supervision within the specific research project and as a member of the research team.
2. Design, develop and refine research using a range of structural models; this includes
   • carrying out research on modelling methods to understand and quantify the sensitivity of aircraft structural design to new engine concepts and the sensitivity of engine structural design to new aircraft configurations.
   • developing agile structural simulation methods (aircraft load prediction and structural integrity), demonstrating efficient analysis framework on relevant industrial case studies.
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 PI and 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, or 5 years relevant industrial experience.
2. 2:1 or higher degree in Aerospace Engineering, Mechanical Engineering or related science.
3. At least 3 years relevant research/industrial experience to include
   • Demonstrable experience in programming/scripting, beyond that taught in undergraduate engineering courses.
   • Demonstrable experience in the use of Finite Element Analysis for the design, optimisation or verification of aerospace structures.
   • 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. Experience of working in an industrial aerospace setting.
5. Experience of:
   • contributing to broader management and administrative processes.
   • contributing 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. Good communication skills and able to demonstrate ability to communicate complex information in English effectively in oral and written format, including an ability to present at boardroom level.
9. Good interpersonal skills with a demonstrable 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.

DESIRABLE CRITERIA:

1. Demonstrable experience in:
   • Automation of structural analysis 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.
2. A track record of high quality publications appropriate to stage in career.