

Research Associate – InnovateUK/ATI - Aerospace Next Wing Engineering Design Integrated smart component digital twin models to facilitate collaborative co-design

Job Ref: REQ230223

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Project Description

Loughborough University have received funding as part of a £20m project led by Airbus. Loughborough will research model-based systems engineering involving smart models and enabling modelling and simulation capabilities. Smart components in this context are parametrically scalable to meet changing requirements to rapidly design optimum solutions across aerospace design, manufacturing and services. An important aspect is to research collaborative co-design environments involving embedded smart component models using new advanced digital tools. This is an exciting multi-partner project with an opportunity to research next generation coupled digital-twin models with executable systems models and completely new programming techniques. The successful applicants will be working at the very forefront of aerospace engineering.

This is an exciting opportunity for researchers to join a strong group investigating and developing model based systems engineering and digital-twins to shorten next generation aircraft product development cycles that will deliver Airbus' Zero Emission ambitions.

The Research Associates will primarily be based in the Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Advanced VR Research Centre located in the University's Science Park - Holywell Park, with opportunities to work with the collaborating organisations.

The work entails, primarily, the following activities under the direction and supervision of Professor Roy S. Kalawsky.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose

The Research Associates will be responsible for conducting research into digital-twin methods involving model based systems engineering, advanced modelling and simulation integrated into a collaborative co-design environments.

Job Duties

Research

- To conduct scientific and technological research into new model-based systems engineering techniques.
- To be responsible for undertaking research into smart (parametrically) scalable models and their integration into a collaborative co-design environment.
- To be responsible for undertaking research into model integration methods at surrogate and higher fidelity representations.
- To conduct analysis of resultant model data and, where appropriate, model verification and validation.

- To work with other Loughborough RAs funded by Airbus
- To assist in other related engineering research projects as required.
- To carry out literature reviews, to write up technical reports and technical papers for publication of the results obtained and the generation of research posters and other publicity media.
- To make technical presentations at project meetings.
- To plan, manage and conduct the work to agreed deadlines.
- To set and monitor budgets with respect to expenditure on equipment, consumables and travel.
- To assist in guiding and training postgraduate research students.
- To assist in managing research projects.
- To assist in developing new lines of research and the writing of research proposals.
- To keep close contact with research project sponsors and make technical presentations.
- To maintain confidentiality where appropriate and to ensure that intellectual property (IP) agreements are met.
- To identify and report new opportunities for IP generation.
- Where necessary, to spend short periods of time travelling in the UK and overseas.
- Travel to Airbus and project partners and other organisations on an ad-hoc basis.

Teaching

- Teaching is not the primary purpose of this post and teaching load will be small relative to the typical load of a member of academic staff in the School, but the Research Associate will be expected to contribute to taught programmes and student projects, at any level, if appropriate and if requested to do so.

Other Related Activities and Functions

- To engage in training programmes in the University (eg through Professional Development) and elsewhere as required.
- To undertake such other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to the Project Investigator, Professor Roy S. Kalawsky

Person Specification

Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

- 1 – Application
- 2 – Presentation
- 3 – Interview

Essential Criteria

| Area | Criteria | Stage |
|----------------------|---|---------|
| Experience | The conducting of original research that can be, or has been published in high quality journals | 1, 3 |
| | Use of advanced modelling and simulation techniques | 1, 3 |
| | Project planning | 1, 3 |
| | Competence in a modern computing language | 1, 3 |
| | Competent IT/ Internet user | 1, 3 |
| Skills and abilities | Demonstration of excellent technical ability | 1, 2, 3 |
| | Excellent inter-personal and communication skills - both written and oral | 3 |
| | Excellent team-working skills | 3 |
| | Excellent research paper or report writing skills | 1, 3 |
| | Highly-motivated with the ability to set and meet deadlines appropriate to the progress of the project | 1, 3 |
| Training | A willingness to undertake further training as appropriate and to adopt new procedures as and when required | 3 |
| Qualifications | A 2:1 Engineering degree or preferably a PhD degree (or approaching completion of a PhD) in engineering, or relevant computing subject. | 1 |
| Other | Willingness to travel | 3 |
| | Commitment to observing the University's Equal Opportunities policy at all times | 3 |

Desirable Criteria

| Area | Criteria | Stage |
|----------------------|---|---------|
| Experience | Equipment purchasing/budgeting | 1, 3 |
| | Project management/leadership experience | 1, 3 |
| | Computer aided design techniques for mechanical systems | 1, 3 |
| | Experience with modelling techniques | 1, 3 |
| Skills and abilities | Knowledge of aerospace engineering | 1, 3 |
| | Track record in originating and developing new ideas | 1, 2, 3 |
| | Relevant industrial experience | 1, 3 |
| | Interest in aerospace | 1, 3 |
| | Interest in engineering simulation | 1, 3 |

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|----------------|--|---|
| Qualifications | Relevant postgraduate research qualifications or industrial experience in any one of the following areas: 1. Aerospace design; 2. Applied modelling and simulation; 3. Model-based systems engineering; 4. Model-based systems engineering tools; 5. Relevant subjects in computing, physics, materials science or mechanical engineering | 3 |
| Other | Licensed for driving in the UK | 3 |

Conditions of Service

The position is full-time and fixed term for 3 years (not extending beyond the project end date of TBA). Salary will be on Specialist and Supporting Academic Grade 6 (£33,348 - £43,155 per annum), at a starting salary to be confirmed on offer of appointment.

The appointment will be subject to the University's Terms and Conditions of Employment for staff grades 6 and above, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which are available at <http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure---page.html>.

The University offers a wide range of employee benefits which can be found [here](#).

In addition, the University is supportive, wherever possible, of flexible working arrangements. We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see <http://www.lboro.ac.uk/services/hr/athena-swan/>