Department of Aeronautical and Automotive Engineering
School of Aeronautical, Automotive, Chemical and Materials Engineering

Research Associate in Service Analytics and Optimisation - Fixed Term Contract until 30 April 2019

Job Ref: REQ180090

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.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

Given the growing pressures for enhanced service provision, for all service providers, there is an emphasis on operating efficiently, with high quality, meeting regulatory standards under the pressures of often reduced resources. To enable a decision as to how best to improve a service requires knowledge of the current product/process service provision to enable an evidence base for future service provision solutions. In the manufacturing domain, with new mechanisms for data acquisition sought through the use of embedded products, such as RFID, the inclusion of potential embedded intelligence (within a product or process) is enabled. To fully utilise the intelligence the data acquisition needs to be supported by data analytics and a decision mechanism for optimisation of the service through the knowledge gained. The resulting business decision support system, will act as a mediating service which will provide integration to support the optimisation of key performance indicators from different business perspectives e.g. efficiency, resource utilisation, quality. Optimisation is required, enabling improved efficiency across the product lifecycle, entailing better resource utilisation, increased productivity and reusability, improved product quality and reliability and maintainability, prolonged service life, and decreased costs.

The research will be considering methods for service analytics, optimisation, diagnostics and prediction. There is the requirement to use data mining methods, forecasting approaches, alongside AI methods. Physics and maths based models of processes and systems, integrated with measurements, resource and cost models, and reliability, replacement and maintenance models, will be utilised to achieve the research aim. A multi-objective optimisation procedure will be required and hence an understanding of optimisation methods and evidence of implementation is paramount. The optimisation tool will enable manufacturing intelligence by providing a knowledgeable adaptive decision support tool to facilitate informed decision making for the whole life cycle.

This project is funded by EPSRC (under the AI2M project) and will involve collaboration with a number of industrial partners who are supporting the research work and the successful candidate will be expected to work alongside these collaborators at the appropriate time.

AI2M PROJECT

This Adaptive Informatics for Intelligent Manufacturing (AI2M) project is a collaborative project with Industry and Academia funded by ESPRC as part of their ICT in Manufacturing Research Call. The aim of the project is to develop an on-demand intelligent product lifecycle service system for increased yield for products and processes that can bridge the information gaps associated with inefficient supply chain integration and a lack of knowledge on product usage throughout lifecycles. The project involves a team of Research Associates and PhD students across four Schools within the University, Wolfson School of Mechanical and Manufacturing Engineering, School of Business and Economics, School of Science: Computer Science department and the School of Aeronautical and Automotive, Chemical and Materials Engineering: Aeronautical and Automotive Engineering department. The

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researchers will be working in four main areas: Utilisation of Embedded Distributed Components, Information Services, Services Gateway, and Business Decision Support Services. The project is supported by a number of business partners, focused on the UK's automotive, defence and aerospace electronics manufacturing domains.

This position advertised is to be based within the Aeronautical and Automotive department and will focus on the Business Decision Support Services.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose: To contribute to, and enhance the research on service analytics and optimisation.

Job Duties:

- To develop models and algorithms to analyse service provision through analytics and optimisation, applied to a number of manufacturing related domains.
- Conduct research and undertake analysis, review and evaluation in relation to the research project in terms of developing methods for lifecycle optimisation, diagnostics and prediction, in line with the direct needs identified from the collaborators service requirements.
- Work with the Principal and Co- Investigators to produce papers for publication within International and National Journals and presentation at relevant conferences.
- Write bids to relevant research councils to extend this research project following the initial analytic and optimisation outcomes.
- Write up regular progress reports and present outcomes to all Investigators and Collaborators.
- Travel to attend meetings and make presentations both within the project partners working group and to external stakeholders.
- Be responsible for conducting the day to day running of the project.
- Maintain confidentiality at all times and ensure that intellectual property (IPR) agreements are not violated.
- Engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.
- Undertake 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

Academic Principle Investigator – Dr Lisa Jackson

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 – Test/Assessment Centre/Presentation
3 – Interview

Essential Criteria

Area	Criteria	Stage
Experience	Academic publication record in the area of service provision analysis, data analytics, or optimisation	1,3
	Experience of current research in data analytics, diagnostics and optimisation	1,3
	Post-doctoral experience in Analytics/Optimisation	1,3
Skills and abilities	Ability to work independently and also as part of a team	3
	Analysis skills to interpret data	1,3
	Knowledge of the following Microsoft Packages and programming languages: Word, Excel, Power Point, C++ or similar programming language	1,3
	Good interpersonal, and organisational skills	1,3
	Willingness to travel as required (e.g. conferences, project team meetings)	1,3
	Skills in a range of data analytics, optimisation and related Operational Research (OR) methodologies	3
	Ability to produce project reports and technical presentation to industrial and academic research groups	1,3
	Good verbal and written communication skills	1,3
Training	Willingness to undertake training when necessary	3
Qualifications	A First, or upper second class first degree in a relevant engineering/mathematics discipline PhD qualification in OR methodologies including data analytics or optimisation methods	1 1
Other	Evidence a good working knowledge of equal opportunities and understanding of diversity in the workplace	3

Desirable Criteria

Area	Criteria	Stage
Experience	Experience of working with external industrial organisations	1,3

Conditions of Service

The position is FULL TIME and on a FIXED TERM contract for until 30 April 2019. Salary will be on Specialist and Supporting Academic Grade 6 £29,799 - £31,604 per annum at a starting salary to be confirmed on offer of appointment. Subject to annual pay award.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Academic and Related staff/Operational and Administrative staff, 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.

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html

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/

Informal Enquiries

Informal enquiries should be made to Dr Lisa Jackson by email at L.M.Jackson@lboro.ac.uk or by telephone +44 (0)1509 227276.

Applications

The closing date for receipt of applications is **7 March 2018**.