

Research Associate – Data Analytics and Machine Learning for Manufacturing

Job Ref: REQ240855

Full or part-time, 12-month fixed term

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

The Wolfson School of Mechanical, Electrical and Manufacturing is one of the leading Engineering Schools in the country. With a strong tradition in Manufacturing and in the discovery and application of Materials for applications in a broad range of industrial sectors (e.g., electronics, bioengineering & healthcare, automotive, food industry, etc), we strive for academic excellence and research at the leading edge.

Project Description

The post can be held remotely or on-campus. Full time or a lower FTE (i.e. Part-time) would be considered and is to be discussed with the candidates at interview.

Data analytics methods are increasingly being applied to understanding materials discovery, processing parameters in manufacturing, and materials performance. We are looking for a data scientist with an interest in manufacturing and engineering who can utilise techniques to classify data, and basic machine learning algorithms and tools to model manufacturing processes and materials discovery to support parameter optimization and decision making to reduce, or even avoid, waste and ineffective interim steps.

The goal of this project is to utilise a range of data analytics techniques and methods to study the design, manufacture and validation of alloys, porous structures and their performance in applications such as bioengineering, automotive, heat transfer, electrochemistry and food technologies.

Job Description

Job Grade: Specialist and Supporting Academic Grade 6

Job Purpose

To utilise Data Science tools and Machine Learning algorithms to build models using data collected and classified from the “test laboratory” to extend our knowledge and understanding of the processes, materials performance, process optimisation, etc.

Job Duties

- Survey of the options available in data analytics, machine learning and artificial intelligence algorithms for implementation in materials science and manufacturing
- Survey of the open-source analytics engines and benchmark against commercial products available in this area of data analytics

- Implement basic tools aimed at the non-specialist engineer, so they can integrate these models in the day-to-day operations.
- Evaluate the agility, configurability, scalability, reusability, robustness and sustainability of developed data analytics system / methodology in response to end-user defined operational scenarios
- Analyse experimental and modelling results and prepare reports, research papers and presentations for dissemination at project meetings, National and International conferences and seminars.
- Maintain confidentiality of results and other confidential information.
- Comply with University Health and Safety Policy and with all University Rules and Regulations.
- Willingness to 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

Reports to Prof C Torres-Sanchez and Prof P Conway, Principal Investigators.

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. 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	Knowledge of basic tools in Data harvesting, gathering, classification, and experience having worked with data sets of different sizes	1,3
	Design, Implementation and Evaluation of data analytics trials (using machine learning tools) using real data sets	1,3
	Experience of machine learning and artificial intelligence modelling and analysis technologies, trials and assessments using tools and services (e.g., Matlab, Jupyter, Python, etc)	1,3
Skills and abilities	Ability to work accurately and precisely and to record information gathered	3
	Ability to undertake data modelling and visualisation with a focus on knowledge representation	1,3
	Proven excellent communication skills in English	1, 3
	Self-motivated and able to work without close supervision, especially when working remotely	3
	Ability to work to deadlines	3
	Good report writing and presentation skills	1,2,3
	Ability to maintain confidentiality at all times	3
Qualifications	Ph.D. completed (or about to complete) in practical applications data analytics, machine learning, artificial intelligence, or related topics	1,3
	Equivalent industrial experience to that of a PhD graduate (working in the area of data collection, data analytics, data management, etc)	1,3

Desirable Criteria

Area	Criteria	Stage
Experience	Experience of techniques that deal with supervised and un-supervised data analysis	1,2,3
Skills and abilities	Data analytics, modelling, optimisation and knowledge management experience within academia and industry	1,3
Qualifications	Completion of recognised data analytics, machine learning and artificial intelligence applications courses	1,3
Other	Able to travel independently	1,3

Conditions of Service

The position is FULL OR PART TIME and FIXED TERM for 12 MONTHS with the possibility of an extension based on the project's mid-term review. Salary will be on Specialist and Supporting Academic Grade 6, £33,966 - £44,263 per annum, depending on the candidate's experience at the time of appointment.

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/>