UNIVERSITY OF LEICESTER

Job Summary

Job Title: Research Associate in Advanced Space Manufacturing Technology
Grade: 7
Salary: £39,906 to £46,049 per annum, pro-rata if part-time
Department: School of Computing and Mathematical Sciences
Hours/Contract: Full-time or job share, fixed term contract to 26 February 2027
Reference: 12594

Role Purpose

To have specific responsibilities with an established research programme. To work collaboratively and independently as part of a research team to achieve defined milestones and produce high quality research as part of a wider programme.

Main Duties and Responsibilities

Research Activities

- Lead the research and development of a digital twin of the welding system
- Collaborating with engineers to design and fabricate a prototype welding end-effector
- Working with industrial partner to test and evaluate the system
- Conduct experiments/trials, and collect, process and analyse the large sets of data from the experiments/trials.
- Produce a demonstrable system and conduct demonstration in different events.
- Represent the research team in project's meetings, and lead the inputs to project's deliverables.
- Disseminate results/findings in project events and to the broader community.
- Develop further novel research ideas and contribute to grant applications.
- Support the team in other related research projects.

Impact and Knowledge Exchange:

- To work, contribute and collaborate with current and potential industry and academic partners.
- To engage proactively in activities that strengthen and demonstrate the University's research impact.

Professional Development:

- Attend conferences, seminars and workshops to engage in work that supports your own professional development.
- Write, publish and present research papers in leading academic venues especially peer-reviewed journals.

Leadership and Citizenship:

- Provide mentorship, support and guidance to other team members, research staff, students, and early career researchers.

Internal and External Relationships

- Work with other university staff and students, act as a mentor for junior researchers.
- Investigate and propose new research ideas related to critical transitions in IOSM technologies, digital metallurgy for space, and advanced manufacturing techniques.

- Interact, collaborate and build partnership with external university linkages, industry partners and academic institutes.
- Present research to potential industry partners and academic venues such as conferences, workshops and seminars.
- Work with other university staff and students, act as a mentor for junior researchers and may assist in teaching responsibilities.

Planning and Organising

You will be required to effectively manage your time to plan your research activity and to deliver on the priorities of the project:

- Must prioritise tasks within agreed work schedules. The candidate should be able to work independently and also with the principal investigator and project manager if needed to priorities tasks and come up with realistic work schedules.
- Must plan for specific aspects of research incorporating issues such as deadlines, project milestones and overall research aims.
- Adapt daily and weekly plans to accommodate new developments and be flexible to the changing priorities of the research project.

Qualifications, Knowledge and Experience

Essential

- A PhD (or equivalent research experience) in Mechanical Engineering, Aerospace Engineering, Robotics, Materials Science, or a closely related discipline***
- Demonstrated research experience in at least one of the following: 1) **Welding or metallurgical process modelling**, or 2) **Robotics, space systems, or digital twin development***
- A strong record of **peer-reviewed publications** or equivalent research outputs***
- Experience in conducting **experimental or simulation-based research** relevant to advanced manufacturing or space systems.
- Understanding of **R&D project lifecycles**, documentation, and collaborative research practices.

Desirable

- Experience in **robotic end-effector design**, **automation**, or **mechatronic system integration**.
- Knowledge of **in-orbit servicing and assembly (IOSA)** or **space manufacturing technologies**.
- Familiarity with **finite-element analysis**, **process simulation**, or **machine learning for process optimisation**.
- Experience in working with **industry partners** or **multi-institutional research projects**.
- Awareness of **health, safety, and risk management** in laboratory or high-energy process environments.
- Experience with digital twin platforms, sensing technologies, or simulation-hardware coupling
- Awareness of UK space sector priorities and the broader context of sustainable in-orbit operations.
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Skills, Abilities and Competencies

Essential

- Strong analytical and problem-solving skills, with the ability to **design, implement, and evaluate experiments or simulations**.
- Ability to **work independently and collaboratively** within a multidisciplinary team
- Excellent **written and verbal communication skills**, including the ability to produce technical reports and scientific papers
- Proven ability to **present research findings** clearly to academic, industrial, and public audiences
- Capacity to **prioritise tasks and meet deadlines** in a fast-paced research environment.

Desirable

- Practical skills in CAD, programming (e.g., C++, Python), Robot Operating System (ROS), CFD simulation or data acquisition systems.
- Ability to supervise or mentor students in a research or laboratory setting.
- Evidence of initiative and innovation in developing experimental setups or analytical methods.

Criteria to be used in shortlisting candidates for interview

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

Supporting University Activities

As a University of Leicester citizen, you are encouraged to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We encourage all staff as citizens to work flexibly across the University if required. If supporting these activities is likely to affect your workload, please speak to your line manager in the first instance

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University Values

Inclusive - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

Inspiring - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

Impactful - As Citizens of Change we will generate new ideas which deliver impact and empower our community

Freedom of Speech

The University is committed to upholding freedom of speech and academic freedom within the law throughout our recruitment processes. We ensure that all candidates are considered based on merit and suitability for the role, without regard to their lawful viewpoints or the expression of challenging or controversial ideas. Our recruitment policies and practices are designed to protect applicants from discrimination or adverse treatment on the basis of their opinions, and to foster an environment where open debate and diverse perspectives are valued as essential to our academic mission.

Equity and Diversity

We believe that equity, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equality support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equality, diversity and inclusion.