Wolfson School of Mechanical, Electrical
& Manufacturing Engineering

Loughborough University

Robotics and Manufacturing Lab Technician

REQ231075

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

School summary

The Wolfson School of Mechanical, Electrical and Manufacturing Engineering is one of the UK's largest engineering schools. It is home to around 250 academic and research staff, 80 professional staff, 1950 undergraduate students, 180 postgraduate MSc students and 160 research students.

This position will support world leading research projects and related teaching activities within The Intelligent Automation Centre at Loughborough University. The aim of this centre is to support UK manufacturing industries by delivering breakthroughs in robotics and automation technology.

Project Description

The successful applicant will be responsible for supporting several major research projects, as well as robotics related practical teaching activities, within The Intelligent Automation Centre. Industrial Robots-as-a-Service (IRaaS) is a three-year research project, co-funded by EPSRC and consortium of Industrial partners. It presents the opportunity to investigate how to make automation more accessible particularly for small and medium size enterprises (SMEs). IRaaS makes use of light-weight mobile robots that work collaboratively to undertake complex challenging tasks. The First Time Concrete (FT-Concrete) project is focused on using industrial robots to accurately manufacture large (circa 2.5m) concrete parts. This technology was pioneered at Loughborough and the current concrete printing system combines two industrial robots with a concrete pumping system and a robotic milling head; allowing concrete deposition to be followed by a complementary robotic milling step that improvements accuracy and can add fine detail. ISCF Research Centre in Smart, Collaborative Robotics (CESCIR) is a national centre that works with industry partners to identify and tackle their problems related to the effective exploitation of Cobot technology.

Job Description

Job Grade: Technical Services Grade 6

Job Purpose

Working within the Intelligent Automation Centre you will work with other technical staff across the school to provide support and advice on robotic manufacturing related research projects. You will bring specialist expertise in the use general use of industrial robots/cobots, including knowledge related to setup and commissioning, safety, programming and control. You will be able to manage and advise on the specification and integration of accessory devices such as grippers and other end-effector, and support robotic system integration. You will provide support in the operation of robotic systems for 3D printing and Robotic milling, this will include supporting the tool path generation using various software tools. In addition, the role holder will be expected to support the academics in the Centre with input into UG and PG individual and group projects. You will be a creative problem solver that provides specialist support to academic colleagues engaged in research and teaching activities, helping in the design and manufacture of proof of principle prototypes and demonstrator systems.

You will work as part of the Intelligent Automation Centre Research Team, working closely with the Centre Director, Centre Manager, and researchers to achieve the ambitious goals we have set for ourselves.

You will support, promote, and participate in the University's people strategy, in your staff development and continuous professional development (CPD) including succession planning.

All professional and support staff are responsible for providing students with the best learning experience possible. Providing this learning experience is pivotal to our continued success in providing our graduates with the foundations needed to build a productive and rewarding career.

Job Duties

- Be responsible for liaising with research staff (academic and technical) and students providing technical support and instruction related to the operation of industrial robot systems in the lab. You will be one of the main points of contact for Researchers requiring technical support for robotic systems.
- Engage with academic colleagues to develop an understanding of their research and requirements; and understanding the intended outcomes for these. This will require working with a range of stakeholders including our academic team, PhD students and undergraduate students.
- Be able to create technical drawings at the design stage, for experimental rigs and test setups.
- The design, manufacture, repair, development, construction, modification and commissioning of robotic and associated equipment, rigs and models using a full range of conventional, CNC machine tools and bench fitting equipment, assembly and associated skills.
- Support the generation of Robotic tool paths for Robotic material deposition (3D printing) and robotic milling (CAM) for post processing of work.
- Use CAD/CAM for post processing of work into operational programs to produce components using CNC machinery and/or 3D printers.
- Fault diagnosis, calibration, testing, and repair down to component level of automation and robotics equipment in daily use, recording of results and subsequent updating of the Centre's equipment database register. Maintenance and repair of laboratory-based equipment. E.g. Industrial robot arms, sensors, electric and/or pneumatic actuators/tools, programmable logic controllers, etc.
- Providing general advice to both staff, researchers and students in relationship to component selection, sources of information, design, suitability of manufacture. Training of technical staff, researchers and students in the use of specialist automation and robotics equipment and experimental setups.
- To assist with project demonstrations during external visits, open door events, and research/technology exhibitions within the Intelligent Automation Lab or external venues.
- The safe operation and routine maintenance of plant, equipment and machinery, wherever your work is undertaken.
- To be responsible for ensuring that risk assessments and standard operating procedures are in place for all mechatronic and robotic equipment, specifically for equipment that has been developed in house.
- To ensure strict adherence to established School Health & Safety practices within Intelligent Automation Centre lab, ensuring that appropriate training in the use of equipment in compliance with Health and Safety at Work legislation and the University's compliance policies.
- To maintain a clean and safe lab environment whilst using machinery, tools and ensuring material and consumable stocks levels are maintained.
- Identify improvements to Intelligent Automation Lab processes, workflow, and general efficiency gains.
- To Identify and make suggestions to the Intelligent Automation Centre Director for the requisition and ordering of miscellaneous materials, tools, parts and consumables and maintenance of adequate stock levels.
- To participate fully in the School's PDR (Performance and Development Review) Scheme, identifying and agreeing developmental opportunities for personal and professional development and in response to changing needs within the Intelligent Automation Centre.

Wider Technical Duties & Responsibilities

- You will be responsible for the health, safety and welfare of all staff and students entering or using the Intelligent Automation Lab (and other Workshop/Laboratories you are working in) through the use of correct PPE and the appropriate use of equipment, in compliance with Health and Safety at Work legislation and the University's operational procedures.
- To support the activities of the IRaaS project and Intelligent Automation Centre by manufacturing components and build/integrate prototype human-automation workspaces based on drawings, sketches, and verbal specifications from the project team.
- To support the right First Time Concrete project by maintaining the robotics concrete printing and milling system such that it can be used safely and reliably by all users
- To work closely as a member of the Intelligent Automation Centre to support the planning of future developments of the lab areas and teaching activities, identifying opportunities for improvements.
- Assist the staff, researchers, and students with the completion of Risk Assessments. Carry out COSHH Assessments and assist in the maintenance of area specific records to demonstrate compliance with University Health and Safety Policies.
- Liaise with other University Schools/Departments and outside contractors with regard to layout, installation, modification, upgrade, repair of plant and equipment.
- To take ownership for the maintenance of plant and machinery as instructed by Centre Director to ensure a clean and safe workshop environment is provided whilst using machinery, tools, equipment and materials.
- Ensure that all equipment used within the workshop has a current PAT certification.
- To perform any duties as reasonably required by the Centre Director and Centre Manager.

Behavioural Expectations

- To show and maintain and active approach to CPD (Continual Professional Development). Participate fully in the School's PDR (Performance and Development Review) Scheme, identifying and agreeing developmental opportunities for personal and professional development and in response to changing needs within the Centre.
- To support colleagues in the lab team; to develop broader skills to deliver taught/ supervised sessions throughout the lab thus supplementing the Centre's succession plan.
- To fully engage with Centre life, by participating in open days, visit days and outreach activities. Participation will include but not restricted to, the setting up & dismantling of events, giving demonstrations and act as an Intelligent Automation Centre ambassador showcasing the results of research projects, giving help and guidance, and using initiative as required.
- A positive "can do" attitude to enable the Centre team to achieve their goals.
- A flexible approach to working hours is required due to the inevitable evening and occasional weekend working requirements of the position.

Performance Measures

Performance measures will be used to ensure delivery and performance are maintained. The PDR process will outline specific measures; however, the following examples may be used in the first instance.

- To satisfactorily pass Health and Safety Audits within the specific area of responsibility.
- To satisfactorily pass House Keeping Audits within the specific area of responsibility.
- Carry out tasks with efficiency, to the required quality levels within agreed timescales.
- The on-going development of area of responsibility, such as layout, process, workflow etc.
- Continual Personal Development (Expectation of 5 days per year as a guide)

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

Laboratories and workshops are located throughout the Wolfson School buildings. Due to the specialist nature of this position, there is a large proportion of autonomy in performing this role and therefore significant self-management will need to be demonstrated.

The lab and workshop areas remain open and appropriately staffed until 6pm to accommodate timetabled classes and during project periods to support students effectively.

The Wolfson School has vehicles used to transport equipment across campus; therefore, volunteering to become a registered driver will be welcomed.

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, Digital Security, Welcome to Loughborough, Fire Training and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to: The Technical Resource Manager (Line manager – HR and Technical aspects)

Task Managers: The Intelligent Automation Centre Director and Centre Manager (for Research and Centre Activities)

Responsible for: Ensuring that the Researchers, and Academic staff have adequate Technical Support for the Centre's work and access to all the wider School's workshops and labs via the Technical Resource Manager.

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

Please note that candidates that are invited to Interview will be asked to undergo Testing to confirm their level of competence in operating appropriate work equipment and machinery.

Essential Criteria

Area	Criteria	Stage
Experience	Served a recognised Engineering apprenticeship with substantial experience in an engineering environment, or equivalent suitable experience	1, 3
	Has experience using robotic CNC machining systems.	1, 3
	Experience using Fusion 360, Autodesk, or similar for robotic CAD/CAM,	1,2,3
	Experience of explaining engineering principles and instructing an inexperienced audience in the capabilities of Robotic CNC manufacturing processes.	1,3
Skills and abilities	Ability to operate, maintain and modify a typical industrial robotic system.	1,2,3
	Ability to work independently with minimal supervision.	1, 3
	Ability to work as part of a team with excellent interpersonal skills.	1, 3
	Articulate with strong verbal communication skills and the ability to explain engineering principles and test the understanding of an inexperienced audience.	1, 3
	Highly professional at all times with the ability to lead and gain buy-in from colleagues.	1, 3
	High level of computer-based skills including use of MS Office, Outlook, Excel etc. and the ability to quickly learn bespoke software packages.	1, 3
	Proven ability to apply engineering principals to design and create working drawings, specifications, operating procedures	1, 3
Training	Evidence of Continual Professional Development (CPD) together with a demonstrated willingness to undertake training as appropriate and to adopt new procedures in line with the changing needs of the department and the University	3
Qualifications	BTEC Higher National Certificate / Diploma in an appropriate engineering discipline or relevant vocational qualifications	1, 3
Other	Commitment to observing Health & Safety regulations and the University's Equal Opportunities policy at all times.	3
	Evidence of working within a Health & Safety regulatory environment with proven knowledge and a working understanding of current	1,3

	Health, Safety, PUWER, COSHH and Environmental policies and procedures	

Desirable Criteria

Area	Criteria	Stage
Experience	Previous experience integrating and working with robotics and automation systems in industrial or lab setting.	1,2,3
	Previous experience working with undergraduate students and / or academic research teams.	1, 3
	Previous experience setting up, calibrating, and using data from a range of sensors such as vision systems, force/torque, proximity, light gates, etc.	1,2,3
	Previous experience building, setting up, and validating safety systems for robotic work cells.	1, 3
	Experience setting up, maintaining and operating robotic 3D printing and or milling systems.	1, 3
Skills and abilities	Ability to use high level coding environments such as ROS to control industrial Robots.	1,2,3
	Ability to program industrial robots and programmable logic controllers (PLC).	1,2,3
	Full UK car driving license	1, 3
Qualifications	BTEC Higher National Certificate / Diploma in an engineering subject.	1
	BEng Mechatronic or Robotic Engineering or equivalent.	1

Conditions of Service

The position is **FULL TIME** and **FIXED TERM until 31 January 2026 (position could be extended subject to further funding). Salary will** be on **Technical Services** Grade 6, (£33,966 - £44,263) at a starting salary to be confirmed on offer 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/