

**THE UNIVERSITY OF MANCHESTER**  
**PARTICULARS OF APPOINTMENT**  
**FACULTY OF SCIENCE & ENGINEERING**  
**SCHOOL OF ENGINEERING**  
**DEPARTMENT OF MECHANICAL, AEROSPACE AND CIVIL ENGINEERING**  
**RESEARCH ASSOCIATE FOR ROBOT-ASSISTED MANUFACTURING**  
**VACANCY REF: SAE-023837**

**Salary:** Grade 6 £36,024-£44,263 per annum, depending on relevant experience

**Hours:** 1 FTE, 35 hours per week, full time

**Duration:** 24 Months Fixed Term tenable from April 2024 to March 2026

**Location:** Oxford Road, Manchester

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**Enquiries about the vacancy, shortlisting and interviews:**

Name: Prof. Charlie Wang  
Email: [chanling.wang@manchester.ac.uk](mailto:chanling.wang@manchester.ac.uk)

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**BACKGROUND**

This is a research project taken in the Digital Manufacturing Lab led by Prof. Charlie Wang. The project aims to a computational kernel to effectively generate optimised structure and toolpaths for robot-assisted additive manufacturing with dynamically changed material accumulation directions.

This research will be conducted in the School of Engineering at the University of Manchester, and is funded by the University of Manchester and the UK Engineering and Physical Sciences Research Council (EPSRC).

**Overall Purpose of the Job**

The role of the post-doctoral research associate is to engage in developing new computational algorithm and formulation for generating optimised toolpath and motion of machines while incorporating the manufacturing constraints.

Candidate should have a PhD degree in Mechanical Engineering and strong research record in computational design, digital manufacturing, geometric processing, intelligent mechatronics, or robotics. Excellent skills in C++ programming and mathematics formulation are expected.

### **Key Responsibilities, Accountabilities or Duties**

The range of duties will include:

- Be involved in the assessment of student knowledge and supervision of projects.
- Assist in the development of student research skills.
- Develop research objectives and proposals for own or joint research, with the assistance of a mentor if required.
- Conduct individual and collaborative research projects.
- Write up research work for publication.
- Continually update knowledge and understanding in field or specialism.
- Translate knowledge of advances in the subject area into research activity.
- Deal with routine communication using a range of media.
- Communicate complex information, orally, in writing and electronically.
- Prepare proposals and applications to external bodies, e.g. for funding and contractual purposes.
- Communicate material of a specialist or highly technical nature.
- Liaise with colleagues and students.
- Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
- Join external networks to share information and identify potential sources of funds.
- Manage own research and administrative activities, with guidance if required.
- Work with colleagues on joint projects, as required
- Collaborate with academic colleagues on areas of shared research interest.
- Attend and contribute to relevant meetings.
- Use new research techniques and methods.
- Use initiative and creativity to identify areas for research, develop new research methods and extend the research portfolio.
- Use creativity to analyse and interpret research data and draw conclusions on the outcomes.
- Contribute to collaborative decision making with colleagues in areas of research.
- Use research resources, laboratories and workshops as appropriate.
- Plan and manage own research activity in collaboration with others.
- Balance with help the competing pressures of research and administrative demands and deadlines.
- Be aware of the risks in the work environment and their potential impact on their own work and that of others.

## **PERSON SPECIFICATION**

### **Essential Knowledge, Skills, Experience and Qualifications:**

- Have, or be about to obtain, a relevant PhD (or equivalent) in Mechanical Engineering / Industrial Engineering
- Specialist knowledge in computational design, advanced manufacturing, intelligent mechatronics or robotics
- Experience in C++ programming and mathematics formulation
- Excellent communication and interpersonal skills
- Excellent time management and organisational skills
- Ability to work independently and as part of a team
- Ability to liaise confidently and effectively with a range of individuals
- Flexible approach to dealing with research problems as they arise
- Willingness to learn and develop
- Ability to present in both written and oral publications
- Ability to meet deadlines
- Strong journal publication record.
- The ability to evaluate complex data
- Ability to contribute to broader management and administrative processes.
- Ability to assess and organise resources
- Understand equal opportunity issues as they may impact on areas of research content