

Dalton Cumbrian Facility

Paid Undergraduate Summer Research Placement (REF: DCF2018-1)

Commissioning a robot manipulator (arm) for real world use in a nuclear hot cell

Project start date: Early June 2018 **Duration:** 8-12 weeks

Project summary: The Dalton Cumbrian Facility's nuclear "hotcell" suite allows the manipulation of highly radioactive samples produced during materials science irradiations. Sample manipulation is currently performed by hand using a tong system.

This project consists of commissioning a new robot manipulator and working on the software code. This is 'stage two' of a development project which was started by a placement student in 2017 using an open source architecture called "ROS". The main focus of this year's project is to continue this work, enabling the arm to perform standard handling operations, with a good balance between automation and user intervention. The software interface functions and/or high-level user interface design is key to the success of the project.

The work required is likely to include (but is not limited to) simulation, user software interfacing, testing and developing code for a robotic manipulator, testing of mock-up operations of the hotcell. The final piece of work will be deployment of the robot into the hotcell. In addition to programming, it may be necessary to design and make small clamps and other tooling, using CAD design and 3D printers. Training will be provided for the right candidate for skill gaps where reasonable, but please note that a large section of this project is software development.

Location: West Cumbria, split between The University of Manchester's Dalton Cumbrian Facility (DCF) on Westlakes Science & Technology Park near Whitehaven, and the Robotics for Extreme Environments Lab (REEL) in Cleator Moor. The successful candidate must have their own accommodation in West Cumbria for the duration; The University of Manchester cannot provide or subsidise living costs for this placement. Own transport would be advantageous.

Requirements

- Good mathematical skills
- Previous relevant coding and engineering experience (any code language)
- An understanding of methodologies to control a system in a predictive way
- 3D design, CAD or robotics systems
- Good time management skills and the ability to work under own initiative
- Good communication skills and the ability to work as part of a team
- Ideal for an undergraduate student in computer science, electronics and/or mechatronics

Salary: The successful candidate will be paid £8.64 per hour based on a 35 hour working week.

How to apply: Please email a CV and covering letter to Anne.Knott@manchester.ac.uk by 5pm on Monday 21st May 2018. Your CV should include email addresses and telephone numbers for two referees who are happy to be contacted in relation to this post. Your covering letter should include the post reference number and should explain:

1. Your reasons for wishing to undertake this particular project
2. How you meet all or most of the requirements set out above

Shortlisted candidates will be invited to interview in mid-May. Dates can be flexible to accommodate exams and other commitments. Interviews may be in person or via an appropriate digital platform, e.g. Skype or Facetime.