



## Senior Researcher: Distributed Systems

(2 Year Fixed Term Contract)

Munster Technological University Cork, which incorporates the Nimbus Research Centre, Crawford College of Art and Design, Cork School of Music, and the National Maritime College of Ireland, invites applications from suitably qualified individuals for the post of Senior Researcher.

The successful candidate will work in partnership with the Science Foundation Ireland (SFI) CONNECT research centre on Future Networks and Dell Technologies, Cork. The project investigates the concept of Cloud Robotics, an application of distributed systems to robotic control to allow *disaggregation* of robotic control tasks and *distribution* of control away from the robot and to various computational nodes. The project will research the operational benefits that can be achieved by distributing the control, such as better resource utilisation, simultaneous control of fleets of robots, synchronisation, etc. versus the challenges of increased latency and loss of control accuracy. Project outputs will include software systems and experimentation testbeds to evaluate key research questions and theoretical concepts.

We are looking for a candidate with **strong background in distributed systems and middlewares** to work together with researchers in the Nimbus Research Centre and Dell Technologies.

### **Job Title:**

Senior Researcher

### **Reporting to:**

Project Lead – Dr Donna O’Shea and Dr Victor Cionca

### **Location of Post:**

Munster Technological University (MTU) Cork Campus

### **Contract Terms:**

2 years contract

### **Main responsibilities:**

- Study existing middlewares for Robotic Control (e.g. ROS2) and evaluate them with respect to the trade-off between latency and accuracy of control.
- Investigate the spectrum of robot control primitives and abstractions, from low-level, close to hardware, to high-level semantics, as available in existing middlewares.

- Design and implement software architecture for disaggregating robot control tasks. This includes the definition of client and server roles and the specification of communication protocols.
- Develop sample robotic applications for evaluating the developed software architecture.
- Develop a hardware testbed for evaluating the software architecture. The successful candidate will collaborate with a networking researcher on this task.
- Design and run experiments to evaluate the performance of the developed systems.
- Disseminate project outputs i.e. scientific papers, patents etc.

In addition, the successful candidate is expected to

- Assist with sourcing and purchasing of testbed equipment.
- Contribute to dissemination of results (publications, reports, demos, project meetings etc) as primary author or contributor.
- Contribute to Education and Public Engagement (EPE) activities.
- Interface with the Dell team for reporting, requirements collection, etc.

### **Qualifications, Skills and experience:**

Applicants are **required** to have the following

- A minimum of an Honours Primary Degree (Level 8) in Computer Science or Electronic and Computer Engineering with 4 years research and development experience in distributed systems.
- Strong software development skills.
- Experience using middlewares.
- Experience with development of distributed systems.
- Publications of academic papers in peer-reviewed journals and conferences.
- Excellent interpersonal skills with the ability to work with multiple stakeholders.

### **Desirable:**

- PhD in computer science or electronic and computer engineering.
- Experience with development and evaluation of robotic applications i.e. ROS and ROS2.
- Embedded software development.
- Experience with cloud and edge computing platforms.
- Middleware and protocol development.

### **Terms of appointment:**

The position will be initially for a period of 2 years. The successful candidate would be expected to start as soon as possible after receiving an offer.

### **Salary Range:**

Remuneration will be on the senior researcher salary scale (€43,605 - €53,986) in line with experience.

## **The Interview Process**

At interview the candidates will be assessed under a number of criteria (including but not limited to) the following:

- Software development skills.
- Experience using middlewares.
- Experience with development of distributed systems.
- Publications of academic papers in peer-reviewed journals and conferences.
- Experience with cloud and edge computing platforms.

For informal queries contact Dr. Victor Cionca at [victor.cionca@mtu.ie](mailto:victor.cionca@mtu.ie)

Applications by MTU eRecruitment systems only. Applications will not be accepted in any other format. Please log on to [www.mtu.ie/vacancies](http://www.mtu.ie/vacancies)

**Closing date for receipt of completed applications is 1 p.m. on Tuesday, 1 November 2022.**

### **NOTE:**

In addition to the minimum qualifications, it may be necessary to introduce further shortlisting criteria.

Therefore, applicants may be shortlisted on the basis of qualifications and suitable experience, based on details given in the application form. Applicants should note that they may be called for more than one interview.

Munster Technological University is an equal opportunities employer.