

Faculty of Engineering & Science

Network Security Developer x 2 (2 year fixed-term, whole-time contract)

Overview

The Nimbus Research Centre, MTU, is Ireland's leading research centre on the Internet of Things (IoT) and Cyber Physical Systems domain. From energy and water optimisation and conservation to smart city infrastructure, and Industry 4.0, the Nimbus Research Centre, in collaboration with partners from all corners of the globe, plays a key role in harnessing and translating the research and industry opportunities presented by the recent rapid advances in IoT innovation. In addition to cutting edge national and international research activity, the Nimbus Research Centre operates as an Enterprise Ireland Technology Gateway. The Nimbus Gateway transforms industry through innovation by working with start-ups, SMEs and multinational companies to deliver over 60 innovative smart projects annually, offering an ideal opportunity for researchers to develop their research from concept to market.

Nimbus also hosts the Cybersecurity services of the ENTIRE European Digital Innovation Hub helping companies, in particular SMEs, start-ups, and public authorities to become more competitive by using digital technologies in their business/production processes, products or services. The ENTIRE central office is located at the Tyndall campus in Cork but the EDIH has locations in MTU Cork, Tralee, Waterford and Dublin.

The Cyber Skills project is specifically designed to address the critical skill shortages in the cyber security sector. Currently, there is a global shortage of cybersecurity professionals and Cyber Skills has been designed to enhance Ireland's competitiveness in this context. Ireland's National Cybersecurity Strategy stresses the urgency of addressing this requirement, as well as the need to enhance the national supply of talent, to ensure that Ireland's data centres (which house 30% of Europe's data), businesses, critical infrastructure, networks and systems are protected. Cyber-attacks are putting the advances associated with digitalisation at risk and cybersecurity is now viewed as the linchpin in building the digital resilience necessary to future-proof our businesses, societies and economies. Given that our workforce is our best line of defence, as a country we now need to urgently prioritise cybersecurity education and upskilling to increase the number of cybersecurity professionals that have the skills to detect, respond and recover from cyber-attacks.

Funded under the Higher Education Authority (HEA) Human Capital Initiative (HCI) Pillar 3 scheme, Cyber Skills develops an innovative methodology to rapidly develop enterprise focused education and training to address regional and national skills needs on the specific topic of cyber security in a fast-changing technological environment.

The Cyber Skills project is coordinated nationally across three higher education institutions, namely: Munster Technological University (MTU), University of Limerick and Technological University Dublin (TU Dublin). The project also benefits from an international dimension with the involvement of Virginia's Commonwealth Cyber Initiative which is based at the US University, Virginia Tech.

Location

The Cyber Skills Operations Team is based at Munster Technological University.

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Reporting to:

Cyber Skills Project Manager

Duties & Responsibilities

The two Developers will be working as part of a team providing cybersecurity education and research services to Industry and researching cybersecurity advancements. They will report to the Cyber Skills Project Manager for co-ordination and direction of activities. The researchers will have the autonomy to create and deliver cyber security services for research projects with industry clients, researchers, and lecturers. The Network Security Developers will be supported in publishing suitable research work where appropriate.

The Cyber Range

Working on both a mobile and an online Cyber Range, the developers will be collaborating with leading experts in cybersecurity from both industry and academia. A cyber range is a state-of-the-art cybersecurity infrastructure and provides a secure, sandboxed environment which can simulate real-world feel scenarios and cyber-attacks, making it the leading infrastructure for cybersecurity and networking education and research. A full range of scenarios provides the opportunity to test the vast array of techniques required to keep ahead in the challenging ever-changing threat landscape. The mobile Cyber Range is the only one of its kind available in Ireland and provides the critical capability to perform on-site resilience assessments and other industry related services. It has a physical switch and traffic generator that allows for the development of hybrid models by connecting to real-world networks deployed on physical assets such as databases, monitoring and control systems, ICT (Information & Communications Technology) networks and OT (Operational Technology) environments. This mobile cyber range will be used to provide a range of services to Industry and the research community, creating attack scenarios and generating innovative solutions for existing and future cyber security threats. This mobile unit enables the replication of IT/OT/IoT infrastructures in a secured sandbox environment where cyber-attacks can be initiated and analysed, making it the complete solution for research activities.

The Developers will develop complex simulated and real-world IT/OT environments where they will evaluate security threats and research and develop innovative detection and defensive solutions. The focus of these two positions is on network security: threats associated with cloud vs on-premise infrastructures, and solutions (detection and prevention) that take into account modern network technologies (SDN, programmable data planes) and their challenges. The Developers will collaborate with industry clients, researchers, and lecturers, the role being an opportunity to influence leading security education and research based on societal needs.

The following indicate some of the principal duties and responsibilities that may be assigned:

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This includes but not limited to

- Researching and developing novel innovative methods, models and tools for enhanced cybersecurity operations.
- Designing, modifying, building, testing and experimenting cyberattack scenarios, research frameworks, complex IT (Information Technology) environments, hybrid OT/IT environments and research testbeds. For example, an Internet of Things testbed for security analysis.
- Support collaborative research frameworks developed with other Institutes/ Universities/ Agencies and help in the writing of School/Department/Function and joint research proposals.
- Contributing to the activities of the Cyber Skills project, and associated projects, and expand research outputs.
- Engage in research projects into the provision of cybersecurity services to industry partners including planning, organizing and analysis within the overall scope of a research project or industry engagement.
- Design and setup real-world applicable cyber security scenarios on both the mobile and cloud cyber range infrastructures.
- Dissemination of the results of the research in which they are engaged.
- Advising on and specifying requirements for new and updated equipment.
- Partaking in training and professional development.
- Undertake such other appropriate duties as may be assigned from time to time by the University Authorities.

Key Skills & Experience Requirements

Essential Technical Experience

- Knowledge of Networking and Software Cyber security concepts.
- Proven track record of research and development of security solutions.
- Strong SW development and scripting skills.
- Ability to adapt to changing working practices.
- Fluent in spoken and written English
- Willingness to work flexible hours and travel nationally as required.
- An appropriate third-level qualification at NFQ level 8 or equivalent or above.

Desirable experience

- Knowledge of modern networking technologies (SDN, programmable data planes, 5G).
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- Experience working with Open Source software projects, libraries, and dependencies.
- Knowledge of cloud/virtualization platforms and infrastructure as code tools (e.g., terraform, fabric, salt, chef, etc.).

Qualification Requirements

- Ideally the posts will require researchers who hold a Level 8 degree in a relevant field of engineering or science with relevant project and research experience.

Terms of Appointment

Duration

2 year fixed-term, whole-time contract – 35 hours per week

Salary Range

Remuneration will be on the salary scale (€60,411- €78,864) in line with experience.

Annual Leave

28 Days per annum.

The Interview Process

At interview, the candidates will be assessed under several criteria including but not limited to:

- Cyber Security Knowledge
- Networking Knowledge
- Project management skills
- Teamwork & Communication Skills

NOTE:

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

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

Closing time and dates

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

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Closing date for receipt of completed applications is

1pm on Tuesday, 12th September 2023

For informal discussions in relation to these two roles please contact Jacqueline Kehoe (jacqueline.kehoe@mtu.ie).

The information given in this document is of a general information nature only and should not be taken as contractual.

Munster Technological University is an equal opportunities employer.