



## **School of Computing, Engineering, and the Built Environment Edinburgh Napier University**

### **PHD STUDENT PROJECT**

#### **Funding and application details**

**Funding status:** Self-funded students only

**Application instructions:**

Detailed instructions are available at <https://www.napier.ac.uk/research-and-innovation/research-degrees/how-to-apply>

*Prospective candidates are encouraged to contact the Director of Studies (see details below) to discuss the project and their suitability for it.*

#### **Project details**

**Supervisory Team:**

- DIRECTOR OF STUDY: Keng Goh (Email: [k.goh@napier.ac.uk](mailto:k.goh@napier.ac.uk))
- 2<sup>ND</sup> SUPERVISOR: Simon Smith and Emma Hart

**Subject Group:** Engineering & mathematics

**Research Areas:** Engineering - robotic

**Project Title:** Developing solution for robot in an uncertain environment

**Project description:**

The School of Computing, Engineering and the Built Environment (SCEBE), at Edinburgh Napier University is proud to be contributing to the robotic and automation research and knowledge transfer over the years. With the new investment on several robotic systems, the research team here is ready and looking forward to the next chapter of research adventure.

The 4th Industrial revolution technologies have enabled the distribution of intelligence over many devices including various forms of programmable controllers, smart sensors and data analytic application. The increasing demand on robotic and control systems in manufacturing process have inspired the use of

robotic system in external environment for data gathering and field applications. Often the in the field applications, the environment parameters are unpredictable and the adaptation of the robotic system to such conditions is paramount.

This PhD work will explore current and evolving technologies and solution to investigate the vulnerability of the robotic systems in an uncertain environment and propose solutions to aid the continuing operation of the system. The work will be based on our quadruped robotic systems which will be linked to the 3D lidar sensor for the mapping of surrounding, where data gathered will be fed to the system to optimise the robotic system operation. The ideal candidate will possess some knowledge of quadruped robot operation, sensor instrumentation and programming.

## **References:**

## **Candidate characteristics**

### **Education:**

A second class honour degree or equivalent qualification in Robotic, Mechatronic, Electrical & Electronic

### **Subject knowledge:**

- Mobile Quadruped robot operation
- Control system design
- Microcontroller application
- Sensor measurement and instrumentation
- Programming

### **Essential attributes:**

- Mathematical modelling
- Practical implementation
- Microcontroller application with programming
- Lidar system

### **Desirable attributes:**