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

MRes Student Project

Application instructions:
Detailed instructions are available at :
https://www.napier.ac.uk/research-and-innovation/doctoral-college/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: Dr Keng Goh (Email k.goh@napier.ac.uk)
- 2ND SUPERVISOR: tbc

Subject Group: Engineering & Mathematics

Funding status: Self funded

Project Title: Movement Stability Control for Quadruped Mobile Robots

Project description:

The development of quadruped mobile robots had experienced rapid progress in recent years and also increase in their usage in research and applications. Some applications involve the quadruped robot in an indoor environment, making the movement navigation more predictable. However, for such the robot working in an uncertain terrain such as low-friction surface, uneven ground, loose scree and other challenging scenarios, it will be less straightforward for the movement and navigation.
This project will explore the current quadruped robot development and evolving technologies to investigate the vulnerability of the quadruped robot movement in uncertain terrain and propose a solution that focuses on developing software and hardware to mitigate the challenging environment.
The work will be based on our existing Unitree Go1 quadruped robot research platform for the hardware solution implementation. Modelling and simulation of the robot will be carried out as part research work for initial analysis and understanding.

Candidate characteristics

Education:

A first degree (at least a 2.1) ideally in robotics, automation & control, electrical & electronics with a good fundamental knowledge of microcontroller programming, quadruped robot control, sensor measurement & instrumentation or Master degree in the same subjects.

English language requirement

IELTS score must be at least 6.5 (with not less than 6.0 in each of the four components). Other, equivalent qualifications will be accepted. Full details of the University's policy are available online.

Essential Attributes:

- Experience of fundamental microcontroller implementation and programming, smart sensor and instrumentation
- Competent in hardware implementation, robotic system simulation and practical implementation
- Knowledge of quadruped robotic operating platform, Matlab Simulink software
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

Application checklist:

- Statement no longer than 1 page describing your motivations and fit with the project
- Recent and complete curriculum vitae. The curriculum must include a declaration regarding the English language qualifications of the candidate.
- Supporting documents will have to be submitted by successful candidates.
- 2 academic references, using the Postgraduate Educational Reference Form (download)