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: Abdelfateh Kerrouche (Email: A.Kerrouche@napier.ac.uk)
- 2ND SUPERVISOR:

Subject Group: Cyber-security and system engineering

Research Areas: Robotics

Project Title: Autonomous Underwater Vehicle with multi-sensors prototype for underwater onsite monitoring

Project description:
Maritime activities remain a crucial factor to the economy with high expectations for future growth. According to the United Nation, there are more than three billion people depend on marine and coastal biodiversity for their livelihoods. However, there is a significant deterioration of coastal waters due to pollution which affecting the functioning of ecosystems and biodiversity. So, achieving a sustainable use of the marine environment remains a big challenge.

The use of modern technologies such as Underwater Vehicles to reform the traditional underwater activities is of great significance for improving the efficiency and quality of the monitoring systems in coastal or near-coast areas.

The aim of this project is to, design, build and test an innovative pilot solution based on optical sensors technology and image processing coupled with novel artificial intelligence (AI) algorithms, for autonomous and real-time water quality monitoring.

In addition, the project will exploit the use of embedded electrochemical biosensors for molecular fingerprinting detection. This interdisciplinary project will evaluate existing biosensors and acoustics technologies to determine suitability for their integration into a next-generation portable monitoring system.

Significant demand is expected for such a real-time monitoring system with environmental regulators, water utilities and environmental consultancies.

Perspective applicants are encouraged to contact the Supervisor before submitting their applications.

References:

Candidate characteristics

Education:
A second class honour degree or equivalent qualification in Computer Science, Electrical/Electronic Engineering, Mechanical engineering

Subject knowledge:
- Embedded systems, IoT sensors and devices

Essential attributes:
- Strong AI, machine and deep learning background
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

Desirable attributes:
- Optical sensors.