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 Libu Manjakkal (Email: l.manjakkal@napier.ac.uk)
- 2ND SUPERVISOR: tbc

Subject Group: Cyber Security & Systems Engineering

Funding status: Self funded

Project Title: Flexible and stretchable soft electronic component development

Project description:

In recent years, e-skin have found several applications in robotics, health monitoring, and prosthesis**.** The e-skin is consist of various flexible or stretchable electronics with multiple passive (ionic resistors, switches, and sensors), active (energy generator and storage), and electromechanics (strain, pressure and temperature sensors) components along with a communication system that integrates them. One of the major issues in e-skin development is their bulkiness of the electrode and lack of highly sensitive electrodes for monitoring multiple sensing signals. To overcome these challenges, a new sensitive electrode that can analyse the sensing parameters similar to the biological system will be highly advantageous.

In this project the student will be focussed on the development of a soft and stretchable sensors for wearable applications. The student will be part of the Sustainable Materials Research & Technologies (SMART) Group@Napier

(https://smartnapier24.wixsite.com/napier). The student will prepare new sensitive materials and detailed electrodes, and device properties will be investigated.
If you undertake this research project you will work for 12 months full-time or 20 months part-time and will spend the early weeks refining the project to fit your interests and aspirations.

Candidate characteristics

Education:
A first degree (at least a 2.2) ideally in materials engineering, physics, chemistry, electrical and electronics engineering with a good fundamental knowledge of electronics and materials.

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 of materials, electronics, sensors and its characterisation
- Competent in literature review, report writing and statistical and/or qualitative analysis
- Knowledge of wearable sensors
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

Application checklist:

- Completed application form
- CV
- 2 academic references, using the Postgraduate Educational Reference Form (download)
- A personal research statement (This should include (a) a brief description of your relevant experience and skills, (b) an indication of
- What you would uniquely bring to the project and (c) a statement of how this project fits with your future direction.)
- Evidence of proficiency in English (if appropriate)