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 Oluwaseun Bamgboye (Email o.bamgboye@napier.ac.uk)
- 2ND SUPERVISOR: Prof Xiaodong Liu

Subject Group: Computer Science

Funding status: Self funded

Project Title: Developing Efficient Trust Assessment for Wearable IoT and Smart Devices

Project description:

The integration of sensors and smart devices has evolved into a concept of Wearable IoT (WIoT), which has proliferated almost every aspect of human daily living and wellbeing. Their increasing dependency on our day-to-day life raises serious concerns regarding various important trust considerations. In this regard, the dimension of trust can be considered in terms of data consistency and completeness, timeliness, validity of results, reliability, and availability of service. Trust often plays a significant role in the acceptance and usage of wearable IoT (Internet of Things) technologies.
However, most of the existing research interchangeably used trust and security in a similar context, where they have focused on aspects like detecting adversarial attacks on the utilised hardware and software, malware and viruses, data privacy, use of authentication and authorisation mechanisms, etc. Data privacy and security

of wearable IoT device is no doubt of paramount importance. Therefore, having a trust assessment of non-functional requirements such as reliability, data interoperability, usefulness and failure resistance of WIoT systems still need to be investigated. As such, this project aims to propose an efficient trust assessment of WIoT data based on the correctness and reliability of data produced by the smart devices in a near real-time manner. Possible research objectives to achieve this aim can include the following:

1) Investigate the current landscape of wearable IoT systems and trust management issues with a view of understanding the major strengths and weakness of existing research.

2) Propose an efficient trust assessment framework suitable for a specific related IoT application domain.

3) Evaluate the proposed the unified framework with a prototype system using a relevant use case.

The successful applicant will benefit from the school research trainings and join our vibrant and growing postgraduate research community. The project will be jointly supervised by Dr. Oluwaseun Bamgboye and Prof. Xiaodong Liu, both at the School of Computing, Engineering and Built Environment.

Candidate characteristics

Education:

A first degree (at least a 2.1) in computing or any other numerate discipline with a good fundamental research knowledge.

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 research in a related area and undertaking independent research
- Some familiarity with IoT data processing and smart systems
- Good written and oral communication skills
- Strong motivation and good time management skills

Desirable attributes:

- Knowledge of software engineering, Machine Learning and edge computing

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)