Newcastle University PhD Studentship Award

Title
Securing Sensors in Insecure IoT

Value of award
Full UK/EU fees (eligibility criteria applies to EU students) and annual living allowance of £14,777 (at the 2018/19 UKRI rate)

Number of awards
1

Start date and duration
To start before September 2019, 3.5 years

Application closing date
15th February 2019

Overview
The School of Computing at Newcastle University invites applications for a fully PhD studentship to join a Sensor Security Project.

Ubiquitous sensing through IoT is already revolutionizing our lives. While this is exciting, it is also an opportunity for hackers to steal sensitive information about users. This sensor information leakage happens without users’ permission most of the time. The problem is further exacerbated when the sensors, hardware and software resources come from different vendors. Current protection mechanisms are expensive and operate only on hardware or software level and/or are limited to certain products from specific manufacturers. This leads to high security costs in heterogeneous IoT configurations. Low-cost solutions are only possible by directly bridging between hardware and software and offering optimised cross-layer designs and implementations.

The main aim is to develop a low-cost mechanism to protect the usage of sensors and the generated data in insecure IoT platforms. A new hardware/software interaction and protection approach for sensors on smart devices will be incorporated which is independent of IoT hardware/software vendors and operators.

The successful candidate will A) develop a cross-layer secure interaction model incorporating hardware, software, and communication tasks, B) design an agent that can interact with apps and hardware resources ensuring protection against malicious access, C) apply hardware-enabled API controls and power obfuscation methods to provide fool proof security against side channel attacks, and D) investigate into hardware-software co-design and co-optimisation for low-cost security.

The student is expected to have a strong interest in practical problem solving in computing science and engineering. During the PhD, the student will develop a variety of skills enabling them to enter the fast-growing world of sensors and IoT. This is an interdisciplinary project between computing science and engineering and graduates from these disciplines are welcome to apply. Previous experience with programming and basic understanding of hardware and software security is essential. Previous knowledge on sensors and IoT platforms is desirable but not essential.

Sponsor
Engineering and Physical Sciences Research Council
Name of supervisor(s)
Dr Maryam Mehrnezhad, Dr Rishad Shafik, Prof Alexander Romanovsky

Eligibility Criteria
You must have, or expect to achieve, at least a 2:1 honours degree or international equivalent, in Computing Science, Electrical and Electronic Engineering, Software Engineering, or a related subject.

How to apply
You must apply through the University’s online postgraduate application system. To do this please ‘Create a new account’. All relevant fields marked with a red asterisk must to be completed. The following information will help us to process your application. You will need to:

- Insert the programme code **8050F** in the programme of study section
- Select ‘PhD Computer Science - (Computing Science) as the programme of study
- Insert the studentship code **COMP015** in the studentship/partnership reference field
- Attach a covering letter and CV. The covering letter must state the title of the studentship, quote reference code **COMP015** and state how your interests and experience relate to the project
- Attach degree transcripts and certificates and, if English is not your first language, a copy of your English language qualifications

Please also send a copy of your CV and covering letter to computing.phd@ncl.ac.uk

Contact
Maryam Mehrnezhad, Rishad Shafik