Candidate Information

Position:	Research Fellow or Research Assistant - Verification and Validation
School/Department:	Centre for Secure Information Technologies
Reference:	22/109915
Closing Date:	Monday 27 June 2022
Salary:	Research Assistant - £28,756 - £33,309 per annum. Research Fellow - £34,304 - £36,382 per annum
Anticipated Interview Date:	Friday 8 July 2022
Duration:	Available until 31 December 2023

JOB PURPOSE:

To play a key role within QUB's strategic Centre for Secure Information Technology (CSIT) and engage in challenging cyber security related research projects with national and international academic and industrial partners. Contribute to CSIT's research as part of a major €5M European Union (H2020-ICT-2018-20) collaborative project between leading European universities and world class industrial partners to enhance safety, security and reliability of next-generation autonomous & distributed real-time embedded systems and participate with the industrial partners, such as BMW, German Space Agency (DLR), Vector Informatik, GmbH and FentIss in the development of Proof-of-Concept demonstrators.

MAJOR DUTIES:

1. Conduct research relating to (Research Fellow) or assist in research relating to (Research Assistant):
   - Verification and validation requirements of safety-critical real-time embedded systems for automotive and aerospace.
   - Verification and validation techniques for model-based software development for real-time embedded systems.
   - The use of formal methods for verification and validation of model-based embedded software development.
   - The incorporation of non-functional requirements, such as safety and security, of model-based software development, into the verifications and validation process.
2. Contribute to the development of verification and validation technique for Xandar automated code generation tool, based on Ptolemy II.
3. In collaboration with the project partners plan, design and develop proof-of-concept prototypes to demonstrate the viability and effectiveness of X-by-Construction for safety and security critical distributed real-time embedded systems.
4. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
5. Prepare, in consultation with supervisor, material for publication in national and international journals and presentations at international conferences.
6. Assist grant holder in the preparation of funding proposals and applications to external bodies.
7. Carry out routine administrative tasks associated with the research project/s to ensure that projects are completed on time and within budget.
8. Carry out occasional undergraduate project supervision within the post holder's area of expertise and under the direct guidance of a member of academic staff.
9. Any other duties that may reasonably be requested by the programme supervisor.

ESSENTIAL CRITERIA:

1. Research Assistant (AC1):
   2:1 Honours degree in Computer Science (CS) / Electrical and Electronic Engineering (EEE)/ Mathematics (or related discipline).
2. Research Fellow (AC2):
   Have, or be about to obtain, a PhD degree in CS/EEE/cyber security.

3. Research Assistant (AC1):
   At least 1 years' demonstrable experience of:
   - Software development at the systems or embedded level (preferably in C/C++/Python).
   - Software verification and validation; network, malware or software security or general embedded system security.
4. Research Fellow (AC2):
   (In addition to above) At least 3 years' experience in one or more the following areas:
   - Software Verification and Validation models
   - Formal methods, embedded systems and risk analysis
   - Product development lifecycle and verification development practices.
   - Undertaking and successfully delivering embedded system and/or software verification/validation research projects.
5. Proven ability to contribute to broader management and administrative processes.
6. Excellent interpersonal skills with the ability to communicate complex information to a range of audiences and to develop and participate in internal and external networks.
7. Ability to assess and organise resources.

DESIRABLE CRITERIA:

1. Experience of:
   - Commercial software development.
   - Academic research experience in malware, network security.
   - Working to industry standards.
2. A proven publication record in the area of cyber security and embedded systems.