Candidate Information

Position:	Research Fellow/Research Assistant
School/Department:	School of Electronics, Electrical Engineering and Computer Science
Reference:	19/107165
Closing Date:	Wednesday 20 February 2019
Salary:	Assistant: £27,831 - £32,236 per annum (potential to progress to £35,210 per annum through sustained exceptional contribution) Fellow: £33,199 - £39,610 per annum (potential to progress to £43,266 per annum through sustained exceptional contribution)
Anticipated Interview Date:	Week Commencing 25 February 2019
Duration:	3 to 6 months

JOB PURPOSE:

To pursue research on predicting and efficiently managing the energy-dissipation and reliability behaviour of computing systems. Contribute to the enhancement of edge-cloud experimental testbeds based on embedded-devices/FPGAs/servers, and/or develop methods to effectively manage the energy and dependability of high-performance embedded-devices. Collaborate with the Data-Science and Scalable Computing Research Centre within Queen's ECIT and the UniServer team.

Applicants will need to provide 1) a CV enlisting his education details, work/research project experience, any publications and technical skills and 2) up-to 2 page application letter a) describing the research project that he/she wants to undertake b) enlisting the involved research tasks and steps to be taken, c) mentioning the targeted results and output (demo, conference/journal paper) as well as d) his/her skills that will be utilized for ensuring the successful completion of the project.

MAJOR DUTIES:

1. Develop and plan an area of personal research and expertise, and undertake research under supervision within a specific research project as a member of a research team.
2. Pursue a research project relevant to the below topics:
3. Enhance or develop experimental testbeds based on embedded-devices/IoT, FPGAs and/or ARMv8/Intel servers and use them to characterize the energy/reliability for various workloads.
4. Develop hardware or system behaviour prediction models of processors/DRAMs using artificial intelligence methods.
5. Develop methods to exploit extended operating (e.g. voltage/frequency) margins of hardware components in Linux, Hypervisor, OpenStack to improve performance and energy-efficiency.
6. Develop runtime methods to manage and tolerate memory (DRAM) errors at low cost.
7. Develop timing failure prediction or avoidance schemes, implement and evaluate the scheme within a processing core on a FPGA.
8. Develop a demonstrator of an application running on IoT devices and servers on Edge-Cloud environment.
9. Evaluate low level malware analysis methods on ARMv8 servers.
10. Prepare, in consultation with supervisors, material for publication in an international conference or journal.
11. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to experimental computing systems research.
12. Present regular progress reports on research to members of the research group or to external audiences to disseminate and publicise research findings.
13. Read academic papers, journals and textbooks to keep abreast of developments in own specialism and related disciplines.

Planning and Organising:

1. Plan for the use of research resources, laboratories and workshops where appropriate.
2. Plan own day-to day activity within framework of the agreed research project.

3. Plan to meet deadline for a journal/conference publication.
4. Coordinate and liaise with other members of the research group over work progress.

Resource Management Responsibilities:

1. Configure, install and upgrade experimental computing facilities, including servers, networking equipment and storage systems, along with the necessary software libraries.
2. Ensure research resources are used in an effective and efficient manner.
3. Provide guidance as required to staff and any students who may be assisting with research.

Internal and External Relationships:

1. Liaise on a regular basis with colleagues and students in DSSC, ECIT, the School of EEECS in Queen's University Belfast to build research collaborations.
2. Liaise with collaborators outside Queen's concerning the undertaken work.
3. Join external international networks such as HiPEAC for training and sharing information.

ESSENTIAL CRITERIA:

1. Have or be about to obtain a relevant PhD in Computer Science, Computer Engineering, or a related field.
2. For Research Assistants have preferably at least a MSc (or a 1st Honours equivalent Bachelor degree) on a relevant field.
3. At least 2 years of research experience of prototyping and workload characterization on embedded-systems, FPGAs, or servers.
4. Low level programming and scripting (i.e. python, c/c++, vhdl/verilog).
5. Ability to contribute to research management and administrative processes.
6. Contribute to the School's outreach programme by links with industry, community groups etc
7. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
8. Ability to communicate complex information clearly.
9. Ability to build contacts and participate in internal and external networks.
10. Demonstrable intellectual ability.
11. Ability to assess and organise resources.
12. Ability to travel and present at international conferences and meetings.