

Research Associate or Senior Research Associate in FPGA and embedded systems, with application to network system and sub-systems

1 JOB DESCRIPTION

Faculty / School or Division: Faculty of Engineering, The School of Computer Science, Electrical and Electronical Engineering and Engineering Mathematics (SCEEM), The High Performance Networks Research Group - Department of Electrical & Electronic Engineering and Engineering Maths

Faculty/School or Division Address: Merchant Venturers' School of Engineering, Woodland Road, Bristol BS8 1UB

Job Family:	Research		
Grade/Pathway:	Grade I or J (depending on experience)	Salary range:	Competitive salary starting at £33,797 per annum
Hours of work:	35 per week (Grade I) 100% time (Grade J)	Contract type:	Open-ended with funding for up to 24 months in the first instance, with the possibility of extension
Work pattern:	Full time	Vacancy Reference Number: ACAD103569	

1.1 Main Job Purpose

Based in the High Performance Network (HPN) within the Department of Electrical and Electronic Engineering at the University of Bristol this is an exciting opportunity to join a strong team working to support the fast growth of the laboratory on Optical Networking and Future Internet research.

The High Performance Networks Group (HPN) led by Professor Simeonidou specialises in the application of advanced hardware and software technologies to future optical and layer 2 networks for communications and Data Centre applications.

1.2 Main Statement of Responsibilities

You will carry out research, software development and experimental work for optical and high performance networks in the following fields:

- Digital design of programmable optical and high performance networks
- Network function programmability and virtualization
- High data rate communication networks (10/100 Gbps, up to 1 Tbps)
- Programmable and reconfigurable FPGA design and prototyping
- Embedded system design

You will carry out work leading to publications in high-quality journals and presentation at international conferences and work on research activities with other members of the group as well as collaborative research groups in industrial and university laboratories in Europe and beyond.

You will contribute towards preparation and submission of research proposals to national and international research funding organizations and industry and contribute towards further evolving the existing experimental facilities and assist in project management duties.

You will have a PhD in networks or communications and experience with the following:

- Hands on experience with FPGA programming. From specification, design, development, through to implementation and testing
- Ability to write and debug VHDL or Verilog
- Good Knowledge of C and C++ language
- Verification experience in the lab
- Proven competence and experience with Xilinx devices (Xilinx 7, Zynq, Ultrascale, Ultrascale plus) development boards and tools (ISE, Vivado, Modelsim)
- Basic knowledge of networks
- Basic Knowledge of P4 language

This appointment is offered on a fixed term contract for 2 years in the first instance.

Teaching Responsibilities

As this role is a Pathway 2 (Research) role, there are no formally specified teaching duties required of the role-holder. However, other commitments permitting, the role-holder may be given development opportunities to undertake activities such as teaching on Masters and Doctoral programmes and/ or supervising MSc dissertations within the School of XXXX, as appropriate.

1.3 Relationships

Line manager: Professor Reza Nejabati

Line manager to (where appropriate): Not applicable

1.4 Organisation Charts

Not applicable

1.5 Job Hazards/Safety Critical Duties (Pre-employment health screening)

Not applicable

2 PERSON SPECIFICATION

2.1 Relevant Experience, Skills and Knowledge

Essential

- Proven hands on experience with FPGA programming. From specification, design, development, through to implementation and testing
- Excellent Knowledge of VHDL or Verilog
- Verification experience in the lab
- Proven competence and experience with Xilinx devices (Virtex 7, Zynq, Ultrascale, Ultrascale plus), development boards and tools (ISE, Vivado, Modelsim)
- Knowledge of standard subsystems, including PCIe, DRAM controllers, I2C, etc.
- Basic knowledge of networks
- Proven track record in publishing in leading international journals and conferences

Desirable

- Experience with high speed digital design
- Experience with high speed transceivers (Xilinx GTX, GTH, GTZ, GTY), 10G/100G EMAC
- Experience with FPGA implementation for packet processing
- Experience with Embedded Systems and Microprocessors (ARM, Xilinx Microblaze)
- Experience with Embedded Linux
- Experience with Linux development (e.g. driver, kernel)
- Experience with C/C++ programming
- Knowledge of partial reconfiguration
- Knowledge of DSP programming
- Experience with P4 language

2.2 Relevant Qualifications

Essential

- PhD or equivalent R&D experience (minimum 3 years)

2.3 Communication and Interpersonal Skills

Essential

- Ability and desire to learn quickly.
- Ability to work to deadlines while demonstrating a track record for innovation and creativity
- Excellent verbal and written communication skills with a proven ability to work and communicate well across functional groups.

3 CAREER PATHWAY AND OTHER RELEVANT INFORMATION

3.1 Career Pathways

All members of academic staff have a clear career pathway involving a series of levels with distinct role profiles, each with its unique requirements. Each profile sets out what is expected of an academic at the particular level. The role profiles also set out a collection of competencies expected for each level. Progression or promotion to the next level will occur after these competencies have been attained and where a role at the higher level is available.

The academic pathways are as follows:

Career Pathway One - academic roles that combine teaching, research and administrative duties.

Career Pathway Two - academic roles focusing on research and associated administrative duties.

Career Pathway Three – academic roles focusing on teaching and associated administrative pathways

This post is located on Pathway Two. Role Summaries setting out what is expected of an academic at each particular profile level on pathway two can be found below. Please note that an appointment may be made at any level of the pathway.

A schematic diagram of the career pathways can be found at <http://www.bristol.ac.uk/hr/grading/academic/>.

For Pathway Two roles progression to the next level will only occur where a role has been identified as being eligible for progression, having reached the relevant point on the salary scale and after the relevant competencies have been attained. A progressable role is a role at Level b or Level c that has been determined as being eligible for progression by the Head of Department, based on departmental needs, priorities and funds. Individuals in progressable roles at Level b or Level c are expected to develop their skills, knowledge and experience in order to ultimately progress to Level c or Level d, as applicable. A non-progressable role is one either at Level a (which are not subject to formal progression arrangements, although there may be opportunities to develop into a Level b role, based on departmental needs, priorities and funds), or at Level b or c for which the Head of Department has identified an ongoing need at that particular level. Movement to Level e will be by promotion only.

3.1.1 Role Summaries

Research Associate (Level a)

Role holders at this level are concerned with *assisting* an individual research leader or team to conduct a particular study (or group of studies). They will generally be involved in data generation and/or collection using standard and well-defined methods developed by others. They will be working under close supervision by, and direction from, a more senior researcher, who will be ultimately responsible for the project. This may be the entry level for some staff who are expected to train and/or develop to take on more senior researcher roles. Role holders will be provided with

academic and pastoral support within the department (including counselling on realistic career opportunities) and training will be available designed to develop their competences and to prepare them to take on more responsibilities associated with a higher grade.

Senior Research Associate (Level b)

Role holders at this level will be experienced and professional researchers (or have considerable professional experience) and will be specialists in a particular area or methodology, drawing upon knowledge gained from postgraduate research and/or working within a Level a role. They will be *associated* with a particular project (or projects) and will contribute ideas, and/or enhancement of techniques or methodologies. They will be expected to do some writing for dissemination outside the Department. They will still be working under supervision, but will be expected to take significant initiatives in their work and consult with the Principal Investigator over the details of the project. They may, where practical, contribute to the department's teaching, through supervision of projects, overseeing practical classes, or taking small group classes. They will be provided with academic and pastoral support within the department and training will be available designed to develop their competences (including counselling on realistic career opportunities) and prepare them to take on more responsibilities associated with a higher grade.

Research Fellow (Level c)

Role holders at this level will have substantial experience of research (normally not less than six years). They will initiate and take responsibility for some research projects and may be Principal Investigators or, where a Research Council does not permit this, act as though they were Principal Investigators. They will be involved in administration relevant to their projects (e.g. helping to prepare bids for research funding), managing other researchers and monitoring research budgets. They will be expected to be undertaking research individually and/or collectively and to be advancing the state of knowledge and understanding within their particular area of expertise. They will be publishing regularly in high quality outlets. They are likely to provide some teaching support for the department (consonant with the terms of their funding). They will be expected to be establishing a growing reputation within their particular research field and academic discipline and to be developing and demonstrating intellectual independence.

Senior Research Fellow (Level d)

Role holders at this level will have extensive experience in research and research management. They will normally be Principal Investigators, leading collaborative research bids and research teams, or driving forward innovative research themselves. They will be involved in scholastic projects (e.g. editing journals and academic books), and be making a significant leadership and/or management contribution within their department or the wider university, to be participating in national/international academic networks and conferences. They may be transferring their knowledge through some teaching and/or supervision to undergraduate or graduate students (consonant with the terms of their funding). Role holders at this level will be independent researchers and will have an established national and growing international reputation within their academic discipline generally and research field in particular.

Professorial Research Fellow (Level e)

Role holders at this level will have very extensive experience of research leadership and related management/administration. They will enjoy a wide recognition for their expertise within the academic community internationally (as evidenced by conference invitations, journal editorships, office holding in specialist groupings, associations with appropriate Research Councils etc.). They will have made recognised and significant contributions to the developing knowledge and understanding of their research area. They will already have responsibilities for the creation,

initiation, development and overall management of significant research programmes. They will 'profess' their discipline within the Department, as appropriate and consonant with the terms of their funding. They may also carry significant leadership roles within the Faculty or University.

3.2 Additional Statistical Information. This can also include any other relevant contextual or specific role or team information not included elsewhere

3.3 Relevant Physical and Environmental Information

Informal enquiries can be made to Professor Reza Nejabati Reza.Nejabati@bristol.ac.uk, professor Dimitra Simeonidou Dimitra.Simeonidou@bristol.ac.uk or Dr Arash Beldachi, Arash.Beldachi@bristol.ac.uk

Contract Type: Open-ended, with funding up to 24 months with the possibility of extension.

Please Note: This is a "rolling advert" with a nominal end date only as indicated in the advert. Applications are welcome at any time and the timing of the selection process will be dependent on the applications received.

There is no formal closing date, but the start date for each post is flexible dependent on the circumstances of the successful candidates.