

Research Role Profile

Job Title:	Research Fellow (RAII) in Software-defined Networking
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Responsible to:	Head of research group, or principal investigator
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Responsible for:	Responsibility for staff within own research group
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Job Summary and Purpose

To plan and deliver research in accordance with the specified research project. To contribute to securing funding for own research projects and for projects for those staff under their direct supervision.

Main Responsibilities/Activities

To contribute to the development of the research of the Faculty, by planning and carrying out research activity within a specified area, often in collaboration with colleagues.

To take a significant role in planning, co-ordinating and implementing research programmes and, where appropriate, commercial and consultancy activities. To take lead responsibility for a small research project or identified parts of a large project. This may include planning fieldwork, data analysis and evaluation and laboratory experimentation. To make decisions about research programmes and methodologies, often in collaboration with colleagues, and to resolve the problems of meeting research objectives and deadlines.

To develop new concepts and ideas to extend intellectual understanding. Assess, interpret and evaluate the outcomes of research, and develop ideas for the application of research outcomes. To take a role in the regular publication of results in appropriate journals, in giving presentations at national and/or international conferences, and in other outputs as required and/or appropriate.

To develop innovative research proposals (as a self-contained item or as part of a broader programme), identifying sources of funding, submitting funding bids, and gaining positive reviews for these. Promoting own area of research.

Continually to update knowledge and develop skills. To extend, transform and apply knowledge acquired from scholarship to research and appropriate external activities.

To carry out management and administrative tasks associated with specified research funding, including managing and developing staff within their projects; risk assessment of project activities; organisation of project meetings and documentation; management of resources, preparation of annual reports, and management or monitoring of research budgets. To oversee and implement procedures required to ensure accurate and timely formal reporting and financial control.

To undertake liaison with external organisations including equipment manufacturers, steering committees, associated academic facilities and commercial users.

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To contribute to teaching within the Faculty by carrying out student supervision, demonstrating or lecturing duties within the post holder's area of expertise. May be required to contribute to the supervision of research students.

Person Specification

The post holder must have:

Normally a doctoral degree in a relevant discipline, together with appropriate experience of working in a similar area of work.

The post holder will need to demonstrate a high level of competence and independent standing in research by being nationally recognised within their area of discipline, publishing regularly in recognised appropriate journals and attracting research funding for their own work or for other staff within the research group.

Relationships and Contacts

The post holder may have a key responsibility to the principal investigator, with prime responsibility for reporting and liaison with external funding bodies or sponsors. As a senior member of the project team, the post holder will also supervise the activities of research and technician staff within the particular research group

Special Requirements

To be available to participate in fieldwork as required by the specified research project.

All staff are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities policy.
- Help maintain a safe working environment by:
 - Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand
 - Following local codes of safe working practices and the University of Surrey Health and Safety Policy
- Undertake such other duties within the scope of the post as may be requested by your Manager.

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Addendum to Role Profile

Job Title:	Research Fellow (RAII) in Software-defined Networking
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Job Summary and Purpose:

This information sheet should be read in conjunction with the accompanying generic Research Role Profile and will be used for shortlisting processes. More specifically the post holder will be expected to:

To provide software research and development to support network “softwarisation” research at the 5G Innovation Centre (5GIC) in support of the 5GIC test bed.

To undertake a range of research activities within the SDN/Softwarisation research area, assuming responsibility for specific areas of a project and making use of new research techniques and methods, in consultation with the research award holder or supervisor.

The post holder will work as part of a highly experienced testbed team providing specialised and innovative 5G solutions for both internal and external 5GIC projects under the direction of the Technical Architect.

Main Responsibilities/Activities

- Contribute to the development of the research of the Faculty, by planning and carrying out software research and development within the mobile networks area, often in collaboration with colleagues in the 5GIC mobile networks team.
- Deliver 5G network code to progress the 5GIC softwarisation research projects.
- Be responsible for the analysis, development and delivery of specialised 5G related softwarisation systems, services and software in the faculty, using significant creative and analytical skills to provide innovative, high-quality developments.
- Be responsible for providing effective and professional technical software development output in the field of softwarisation using a variety of approaches, to derive detailed requirement profiles and ensure that developments meet service quality levels while maximising value and minimising cost.
- Formally document new IT/Software developments applicable to softwarisation of networks and where necessary provide training to clients and colleagues in order to fully exploit their potential.
- Be responsible for part of the ongoing development of the specialised 5G software within 5G Innovation Centre by meeting the needs of the user while maximising overall efficiency.
- Liaise with other testbed/ IT staff, providing specialist advice and guidance where needed to ensure effective transfer of skills/knowledge and compliance with regulations and code of practice.
- Plan and organise continuous technical software development to ensure alignment with evolving research and development requirements.

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- Be involved in various aspects of project life-cycle through initial analysis, development, commissioning, testing, documenting, deployment and finally hand-over to the administration team for on-going management and support.
- Develop 5G softwarisation solutions in a team-based environment operating in an agile manner to best use the people and hardware and software resources available at the 5GIC and may potentially interact with international partners to integrate solutions across multiple physical sites.
- Maintain the alignment of the assigned software project with the overall 5G software strategy. This will potentially require resolution of significant technical issues whilst recognising and being sensitive to other project pressures.
- Carry out software design work associated with the relevant software to maintain quality of outputs to provide basis for the University to expand its activity with industry partners and other research institutions.
- Ensure that software design elements of the 5G software are “future-proofed” to facilitate future development in line with the likely rapid evolution of 5G technology.
- Undertake software systems development to deliver first class outputs to industry partners. The post holder will be expected to do this with minimal regular supervision. Typically the post holder will be expected to give formal monthly update summaries to the Technical Architect.
- Be responsible for the development of software systems minimal guidance from the Technical Architect.
- Display a professional approach and confident communication style as they represent a major part of the outward face of the University through the highly visible activities of the 5G programme.

This post is a highly technical and currently unique in the world, which will by definition have to evolve as the project progresses.

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Person Specification

The post holder must have:

- Degree level qualification in Electronics, Electrical Engineering or Computing or substantial vocational experience within the field.
- Sufficient recent experience on network software projects.
- Sufficient development in object-oriented software languages, especially in C++.
- Solid scripting capability in at least one of the following languages (Python, JavaScript/Jscript, Perl, Ruby). Python is highly desirable.
- Sufficient experience with at least one of the following Linux operating systems (CentOS, Ubuntu, Red-hat).
- Solid knowledge of current network-IT trends in areas such as network softwarisation (SDN/NFV), in particular SDN controller technologies, such as OpenDaylight and Ryu.
- Prior experience in configuring and programming SDN hardware switches is extremely desirable.
- Prior experience in configuring and programming Open Virtual Switch (OVS) is highly desirable.
- Prior experience in using SDN simulation tools for Open Flow (OF) is desirable, and is an asset.
- Some level of practical experience in configuration of basic networked equipment such as switches, routers and use of typical network software tools such as Wireshark and iPerf for testing software in real network environments is desirable.
- At least basic understanding of the current and future activities of the 5GIC and the network softwarisation sector is desirable.
- At least basic knowledge of cellular networks (e.g. LTE) is desirable, but not essential.
- Solid knowledge of key IP-suite protocols used in telecoms (IP, TCP, DNS, DHCP, NAT, SCTP).
- At least basic knowledge of formal Operations and Maintenance controls and procedures is desirable, but not essential.
- The ability to resolve internal resource and technical issues whilst maintaining positive external relationships is a key part of the role.
- Effective communication skills as they may need to gain the necessary information from project partners and researchers to progress the project and will need to persuade individuals who they have no authority over to complete tasks to agreed deadlines and within project schedules.
- Capability to make well-judged decisions on how best to allocate their available time to individual projects to best fit with changing strategic priorities.

Relationships and Contacts

The post holder will liaise primarily with the Chief Architect and 5G Testbed team, as well as other staff within the 5GIC. There will also be a requirement to liaise with support and technical staff within the Faculty of Engineering and Physical Sciences.

Development and operation of the software components of the appropriate software will require very significant technical and project management skills as well as dealing directly with 5G Industry partners when required.