Research Role Profile

Job Title:	Research Fellow A- 6G Fellow in Advanced Wireless Technology for Distributed Data Processing

Responsible to:	ICS Director

Responsible for:	Not applicable

Job Summary and Purpose:

To undertake research in accordance with the specified research project(s) under the supervision of the principal investigator.

Main Responsibilities/Activities

To undertake a range of research activities within a specified research area, assuming responsibility for specific areas of projects and making use of new research techniques and methods, in consultation with the research award holder or supervisor. This may include laboratory experiments, computer-based simulations, library research, critical evaluation and interpretation.

Using initiative and creativity to identify areas for development of new research methods and extend the research portfolio. Analysing and interpreting results of own research. Writing up results and preparing papers for submission to appropriate journals and conferences, and other outputs as required and/or appropriate. Attend appropriate conferences for the purpose of disseminating research results and personal development. The post holder may also contribute to writing bids for research grants and will contribute to collaborative decision making with colleagues in areas of research.

Continually update technical knowledge and skills, and translate knowledge of advances in the area into the research activity.

To plan and manage own research activity in collaboration with others. To carry out administrative tasks associated with specified research funding, for example risk assessment of research activities, organisation of project meetings and documentation. Implementation of procedures required to ensure accurate and timely formal reporting and financial control.

To contribute to teaching in the Faculty by carrying out student supervision and/or demonstrating within the post holder's area of expertise and under the direct guidance of a member of departmental academic staff, as appropriate. The post holder may occasionally be required to supervise more junior research staff.

Research Role Profile

Person Specification

The post holder must have:

A PhD degree (or equivalent) in Electronic Engineering, Computer Science or other areas related to RF/Microwave Engineering. Postdoctoral research or industrial experience would be an advantage.

The post holder will have authority over some aspects of project work and must be capable of providing academic judgement, offering original and creative thoughts and be able to interpret and analyse results.

Relationships and Contacts

Direct responsibility to the principal investigator or academic supervisor. The post holder may be asked to serve on a relevant Faculty committee. There may be additional reporting and liaison responsibilities to external funding bodies or sponsors. The post holder may work on original research tasks with colleagues in other institutions.

Special Requirements

N/A

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

Research Role Profile

Addendum to Profile

Job Title:	6G Fellow in Advanced Wireless Technology for Distributed Data Processing

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:

Undertake research on advanced physical Layer algorithms for support of terabits per second communication that includes but not limited to: algorithms for Massive MIMO, Wireless AI and RAN AI, Parallel signal processing, Channel coding and Modulation schemes and diversity schemes, random access protocol design.

Main Responsibilities/Activities

- Undertake a range of research activities in the field of signal processing for future communication systems, e.g., future MIMO processing and data driven artificial intelligent.
- Publish research outputs in top quartile journals and top international conferences in the field of communications systems.
- Undertake a range of research activities in the broader field of signal processing for future communication systems.
- Contribute to the development of research platforms and testbeds and validate theoretical ideas through them.
- Use initiative and creativity to identify areas for development of new research methods and extend the research portfolio in the corresponding field of research.
- 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.
- Plan and manage own research activity in collaboration with the members of the 5G/6G Innovation Centres
- Carry out management and administrative tasks associated with specified research funding.
- The post holder may occasionally be required to supervise more junior research staff.

Person Specification

Research Role Profile

The post holder must have experience in a selection of the following areas:

- Expertise in large-scale MIMO detection and precoding, distributed massive-MIMO architecture and backhaul design, beamforming optimisation and selection
- Expertise in deep learning for wireless modem design including deep learning algorithm development
- Expertise in MATLAB, Python (TensorFlow) and C programming for deep learning
- Strong expertise in signal processing for wireless communication systems (especially modulation/waveform design)
- Very good understanding of new trends in the field like multiuser Multiple-Input, Multiple-Output (MIMO) systems, beamforming methods, and Non-Orthogonal Multiple Access (NOMA) systems
- Recent research experience in the development of advanced physical layer algorithms and systems
- Very good understanding of state-of-the-art detection, interference handling, and channel encoding/decoding methods
- Very good understanding of communications theory
- Strong background in medium access control protocols and random access
- Good knowledge in various optimization techniques
- Expertise in reinforcement learning for radio resource allocation
- Strong research and analytical (mathematical) skills
- Proven track record of innovation supported by publications in high ranked journals and conferences
- Very good written and verbal communication skills