

Research Role Profile

Job Title:	Research Fellow (1A)
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Responsible to:	Head of research group, or principal investigator
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Responsible for:	Not applicable
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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
<p>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 fieldwork, interviews, laboratory experimentation, critical evaluation and interpretation, computer-based data analysis and evaluation or library research.</p> <p>Using initiative and creativity to identify areas for research develop new research methods and extend the research portfolio. Analysing and interpreting results of own research. Write up results and prepare 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 of 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.</p> <p>Continually to update knowledge and develop skills, and translate knowledge of advances in the area into research activity.</p> <p>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.</p> <p>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.</p> <p>The post holder may occasionally be required to supervise more junior research staff.</p>

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Person Specification

The post holder must have:

A doctoral degree in a relevant discipline (although individuals who have almost completed a doctoral degree may be appointed). Consideration may also be given to individuals who do not hold a doctoral degree but have required skills based on a number of years experience in specified / relevant fields

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

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 (1A)

Job Summary and Purpose:

Work in a collaborative research team on the design and implementation of model checking algorithms and techniques, for privacy verification, within the 3-year EPSRC-funded project: "AutoPaSS: Automatic Verification of Complex Privacy Requirements in Unbounded-Size Secure Systems".

Whilst the problem of parameterised verification of logics expressing privacy properties and/or parameterised verification of systems under faithful security semantics (i.e., Dolev-Yao attacker) is generally undecidable, in AutoPaSS, we will look at sub-classes of systems and appropriate assumptions, to yield (semi-)decidable cases. These endeavours view both theoretical foundations and tool development.

Further details of the project are available here:

<https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/S024565/1>

Main Responsibilities/Activities

The main technical responsibility of the post holder will be the development of parameterised model checking techniques for privacy-expressing logics against a semantics tailored to encoding secure systems.

- The post holder will be working closely with associates at Imperial College London and IMS Chennai, as well as strong industrial partners (Thales, Vector UK) on use-cases in connected vehicles and IoT/LoRaWAN. As such, the post-holder is expected to be able to interact (effectively) with these parties.
- The post holder will be also given the opportunity to be co-advising two PhD students on this project.

As such, the breakdown is as follows:

- To undertake a range of research/development activities within the research area, assuming responsibility for specific areas of the project and making use of new research techniques and methods, in consultation with the research award holder.
- Continually update technical knowledge and skills, and translate knowledge of advances in the area into the research activity.
- Liaise closely and regularly with other members of the research group including industrial and external partners.
- Produce materials for project deliverables, dissemination of the results of the project at scientific meetings.

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- Conduct independent research to support project dissemination plans.
- Perform any other duties associated with the project, as deemed appropriate to the grade by the supervisor

Person Specification

Essential

- A PhD in Computer Science, Mathematics, or other closely related area (or be on course of getting one very soon at the time of application).
- Quantifiable experience in formal verification, preferably model checking
- Knowledge of security verification, especially symbolic security verification
- Knowledge of topics in theoretical computer science, in particular system-verification techniques (e.g., logics, formal specification, refinement, abstraction, theorem proving, etc).
- Strong critical thinking skills and ability to develop novel solutions.
- Ability to communicate effectively and work efficiently within an interdisciplinary international research team.
- Ability to take initiative and work independently.
- Ability to present ideas to other experts in the area, as evidenced by conference presentations, seminars, invited talks, or similar.

Desirable

- Experience with security verifiers (e.g., OFMC, Tamarin) and model checkers (e.g., NuSMV, MCMAS).
- Knowledge of cryptography.
- Knowledge of IoT (LoRA) and/or knowledge of ECU-to-ECU communication
- Good programming skills, incl. in functional-programming languages
- Record of peer-reviewed publications, or other similar output.

Relationships and Contacts

Direct responsibility to Dr Ioana Boureau