

Research Role Profile

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

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| Main Responsibilities/Activities |
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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.

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.

Continually to update knowledge and develop skills, and translate knowledge of advances in the area into 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.

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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

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|-------------------|----------------------|
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Job Summary and Purpose:

This information sheet should be read in conjunction with the accompanying generic Research RA1A Role Profile and will be used for shortlisting processes. More specifically the post holder will be expected to:

Development, implementation and assessment of control algorithm and state estimators for fully electric vehicles with individually controlled motors.

Main Responsibilities/Activities

- Development, implementation and assessment of control algorithm and state estimators for fully electric vehicles with individually controlled motors.
- Reviewing the literature and keeping up to date on state of the art in the field
- Engaging with relevant literature from engineering and computer science to identify and adopt useful concepts, methods, and models
- Continuous liaisons with the other participants of the consortium to help ensure the successful attainment of project goals
- Interacting with automotive manufacturers, to consider industrial needs when deciding what simulated test cases and research questions to prioritise
- Reporting key results back to manufacturers to maximise research impact
- To present the research results to the other project participants
- Deliverable report writing
- To prepare conference and journal papers
- To contribute to the training of postgraduate students, where appropriate, including assisting with the supervision of projects in areas relevant to the project.

These duties provide a framework for the post and should not be regarded as a final list. Other reasonable duties may be required consistent with the grade of the post

Person Specification

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The post holder must have:

- A PhD degree on a suitable subject (e.g. Control Engineering, Automotive Engineering, Electrical and Electronics Engineering, Mechanical Engineering)
- Understanding of control algorithms for electric vehicles with individually controlled motors
- Understanding of vehicle software development
- Understanding of vehicle dynamics
- Understanding of control strategies for electrified road vehicles
- Simulation, testing and validation
- Experience of vehicle dynamics modelling and simulation
- Experience developing and testing mathematical models of complex systems
- Experience of data collection, analysis and interpretation of results
- Capable of providing academic judgement, offering original and innovative thoughts
- Good analytical and problem-solving skills
- Scientific ambition with motivation and strong interest in cutting-edge research
- Good time management and planning skills with the ability to meet tight deadlines
- Good written and verbal communication skills
- A strong commitment to your own continuous professional development
- A proven ability to work well both independently and as a part of a larger team of researchers

Solid understanding and experience in (one or more of) the following areas are additional advantages:

- A research publication record in the electric vehicle field
- Vehicle dynamics simulation
- Torque-vectoring control
- Wheel slip control
- State estimation based on extended Kalman filters and Luenberger observers
- Research experience at Post Doc Level
- A knowledge of the automotive industry

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Relationships and Contacts

- Work with the project PI and other researchers within the department and faculty
- Collaborate with consortium partners
- Opportunity to become involved in the supervision of M.Sc. and Ph.D. students