

Research Role Profile

Job Title:	Research Fellow A in Autonomous Robotics for Environmental Science
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Responsible to:	Head of Research Centre, David M. Birch
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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

This document provides additional information relating to both specific aspects of the post/faculty and any post specific person specification criteria. The information contained within this document should always be read in conjunction with the accompanying generic Job Purpose.

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Background Information/Relationships

Agricultural land and activities are a major source of greenhouse gas emissions. Currently, these are monitored using flux towers: large, fixed installations with multiple sensor packages along their height, all measuring gas concentration and wind velocity in time. With this information, the statistical properties of interest (i.e. eddy covariance) can be computed. However, because these installations are costly, normally only one or two towers can be installed per site of interest- and because each tower only provides a measure at a single point in space, total flux can only be approximated.

The purpose of this project (which is already underway) is to develop a mobile robotic flux measurement system using a tethered lifting balloon rather than a rigid tower, together with concentration sensors for CH₄ (the greenhouse gas selected) and wind speed small enough to be used in this application. The focus of this post will be the development of the robotic platform and sensor integration, together with the laboratory and field testing of resultant systems.

This Research Fellow post is within the Centre for Aerodynamics, Aerospace and Automotive Engineering, within the School of Engineering. The project is a collaboration between staff in mechanical, aerospace and civil engineering, and the successful candidate will be working closely with colleagues specializing in remote sensing, sensor development, robotics & automation, and environmental fluid mechanics.

Person Specification

This section describes the sum total of knowledge, experience & competence required by the post holder that is necessary for standard acceptable performance in carrying out this role. This is in addition to the criteria contained within the accompanying generic Job Purpose.

Qualifications and Professional Memberships

**Essential/
Desirable**

A higher research degree (PhD) or equivalent experience in a relevant subject

Essential

Technical Competencies (Experience and Knowledge) This section contains the level of competency required to carry out the role (please refer

**Essential/
Desirable**

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to the competency framework for clarification where needed and the Job Families Booklet).	
Experience in working with robotics & autonomous systems development	Desirable
Experience in electronics design	Desirable
Experience in coding in C++, Matlab, ROS and/or similar environments	Desirable
Experience in environmental science	Desirable
Special Requirements	Essential/ Desirable
Key Responsibilities <p>This document is not designed to be a list of all tasks undertaken but an outline record of any faculty/post specific responsibilities (5 to 8 maximum). This should be read in conjunction with those contained within the accompanying generic Job Purpose.</p> <ol style="list-style-type: none"> 1. Design and develop the autonomous robotic systems required; 2. Integrate sensing and other scientific instruments into the platform; 3. Test and validate systems as required, using the laboratory facilities; 4. Carry out field testing at identified test sites in England and Spain; 5. Contribute to the writing and submission of high-quality scientific papers 6. Deliver scientific presentations to the research section and externally at national and international scientific conferences 7. Help with day-to-day supervision of undergraduate and postgraduate students in the laboratory <p>N.B. The above list is not exhaustive.</p>	