## Section 1
### Role Overview

<table>
<thead>
<tr>
<th>Job title:</th>
<th>Research Assistant or Research Fellow in Machine Learning for Advanced Sensor Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vacancy reference:</td>
<td>3387</td>
</tr>
<tr>
<td>School/Professional Service Unit:</td>
<td>School of Water, Energy and Environment / Energy and Power / Centre for Renewable Energy Systems</td>
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<tr>
<td>Job type:</td>
<td>Full time Fixed Term Contract for 12 months</td>
</tr>
<tr>
<td>Hours of work:</td>
<td>37 hours per week, normally worked Monday to Friday Flexible working will be considered</td>
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</tbody>
</table>
| Salary details: | **Research Assistant** (if PhD near to completion) £30,600 per annum  
**Research Fellow** (if PhD obtained) £33,309 per annum |
| Line Manager: | Dr Jerry Luo, Lecturer in Energy Storage and Harvesting |
| Start date: | As soon as possible |
| Closing date for applications: | 23 August 2020 |
Section 2
About Cranfield University

As the UK’s only exclusively postgraduate university, Cranfield’s world-class expertise, large-scale facilities and unrivalled industry partnerships is creating leaders in technology and management globally. Cranfield’s distinctive expertise is in our deep understanding of technology and management and how these work together to benefit the world.

Find out more about Cranfield, our history, and our rankings and awards here.

Corporate Plan (415i)

Our corporate plan is designed to raise the ambition and enhance the distinctiveness of our University through our people (staff, students and alumni), the industry partners we work with and our unrivalled research facilities. To strengthen our distinctive position in higher education and to grow our University, we have raised our ambition through our 415i goals:

- 4 - 400 fully research-active staff
- 1 - deliver a UK top 10 learning experience
- 5 - achieve a 5% operating surplus
- i - impact, influence, international

What we value

We value ambition, impact, respect and community. These values inform how we work together and our relationships with our partners and students. We believe that success is not only about what we achieve, but how we achieve it. Our values help to define who we are, guide the way we work together and help to shape our decisions. Our shared values were developed with the active engagement of colleagues across the University:

Ambition – We aim high. We do all we can to achieve excellence.

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Impact – We change people’s lives. We make the world a better place.

Respect – We value everyone’s expertise. We support each other.

Community – We build and cherish our Cranfield community. We embrace diversity.

Our shared, stated values help to define who we are and underpin everything we do. Find out more here.

Section 3
About School of Water, Energy and Environment

Cranfield’s excellence in Water, Energy and Environment is recognised internationally. Industrial-scale facilities underpin our research and development in energy technologies, including biofuels, biomass for energy, carbon capture and offshore oil and gas. Our environment activities include internationally recognised centres of excellence in Environmental Risk and Futures, and Water Science. Agrifood has been a core area since taking over the National College of Agricultural Engineering in the 1970s and we own the soil map for England and Wales.

Visit the Cranfield website to learn more about the School’s current research activities, taught programmes and impact:

Learn more about Water
Learn more about Energy and Power
Learn more about Environment and Agrifood
Section 4
Job Details

Job Purpose

You will have a specific set of responsibilities within an established research project. There may be a combination of research and teaching, with appropriate organising and managing in support of these activities.

Key Deliverables

<table>
<thead>
<tr>
<th>Description of Deliverables</th>
<th>% of time</th>
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<tbody>
<tr>
<td><strong>Research</strong></td>
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</tr>
<tr>
<td>Develop and carry out a plan to open up an area of personal research and expertise, or contribute as a research team member to a broader programme. This is likely to include writing bids for research grants.</td>
<td>80%</td>
</tr>
<tr>
<td>Plan and carry out the work programme for own research contribution, using methodology and techniques appropriate to this type of research, e.g.</td>
<td></td>
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<tr>
<td>• investigations leading to the discovery of new knowledge</td>
<td></td>
</tr>
<tr>
<td>• analysing and illuminating data, interpreting and bringing new insights through integration</td>
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<tr>
<td>• application of knowledge in practice out of which new intellectual understanding emerges</td>
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<tr>
<td>Plan and produce independent original research</td>
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<tr>
<td>Investigate models and approaches to test and develop them</td>
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<tr>
<td>Authoring and submission of academic journal articles to high quality journals for publication and dissemination</td>
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<tr>
<td><strong>Teaching</strong></td>
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<tr>
<td>Teach courses and advise students within own subject area, predominantly through lectures and seminars for groups of undergraduates or postgraduates.</td>
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<tr>
<td>Undertake supervision of PhD students as agreed.</td>
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<tr>
<td>Supervise practical work where it is part of the course, and advise students on techniques.</td>
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<tr>
<td>Plan and review own approach to teaching and contribute to the design or revision of course units.</td>
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<tr>
<td>Set and mark coursework and exams, and advise students on their progress.</td>
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<td><strong>1</strong></td>
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<tr>
<td><strong>2</strong></td>
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</tbody>
</table>
Please be advised that the percentages allocated for the key deliverables may be adapted to take into account the needs of the School and / or University.

**Planning and organising**

You must adhere to delivering the research work within the time-scales set by your line manager and demanded by the contract which requires monthly review meetings and summary presentations and planning for the next month’s schedule.

You will be self-directed and well organised. You should be able to develop a forward research plan for yourself over both short and extended timescales. You should have excellent project and time management skills, ensuring that milestones and deliverables are achieved to time and to high quality.

The role will involve short-term responsibilities such as day-to-day project management, interaction with the wider project team and organising project meetings. As different tasks will require different time periods for planning, flexibility and good coordination skills will be important.

Work will need to be clearly documented on a day-to-day basis, showing a clear development path for the project. On an ad-hoc basis you may be required to assist with other related projects where your skills may be relevant.

**Communicating and influencing**

You will collaborate with other research institutions and with industry partners. You will need to be able to demonstrate excellent inter-personal skills to communicate with staff from all organisations across a wide range of disciplines to discuss project methodologies and to interpret results.

You will be expected to be able to articulate information about your work in a clear and concise manner and to discuss problems constructively with your line manager and colleagues.

You will also need to be confident in engaging with stakeholders and key informants from the agricultural and biotechnology sectors. An active and collegiate team mentality is the expected norm at Cranfield.
You will be expected to communicate scientific results effectively through reports and presentations at national and international meetings/conferences, and to prepare articles suitable for publication in high-impact peer-reviewed journals. There is an expectation that at least two peer reviewed journal papers will be published from this project.

There will be opportunities to present project outputs at industry and science conferences through oral presentation and a need to be able to actively contribute to workshops, technical meetings and seminars. A confident approach to presentation and delivery is required.

Problem solving

You are expected to already be a confident and independent researcher. You will be expected to be able to work independently for most of the time, with reference to the line manager and other project colleagues for points of clarification.

You will be expected to think through and solve problems which may be encountered in terms of methodology, the analyses, and development of models and interpretation of results.

Most problems will be solved through experience and through the guidance and mentoring available. You will be expected to discuss problems constructively with the line manager or other colleagues.

You will be responsible for ensuring that appropriate risk assessments are carried out for any new procedures to meet the University specification.

Decision making

I) Decisions you will take without reference to others

- Day-to-day management and planning of on-going research within the overall specifications provided by the project terms of reference / proposal.
- Draft delivery of high quality research and reports to deadline and quality.
- Writing draft journal and conference papers.
- Preparing material for jointly authored papers and conference presentations.
- Active participation in the implementation of health and safety procedures in the areas in which you work.
- Drafting reports, minutes, actions and papers.
- Identifying, collating and communicating associated research papers and reports

II) Decisions you will refer to your manager/colleagues

- Developing new research ideas, proposals, consultancy work and identifying sources of funding.
- Balancing ongoing research commitments, project management and publication/proposal-related activities.
- Activities to enable the dissemination and exploitation of research results.
- Aspects potentially affecting the operation of the project or the outcome of the results, such that they will have influence on the success of the project meeting the goals.
- Budgetary issues related to research contracts.
- Decisions that involve modifications to contracted deliverables.
- Writing journal and conference papers – final submission.

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Research support for PhD and MSc students.

Guiding framework

The guiding framework for this role is the University’s Corporate plan – 415i.

The School of Water, Energy and Environment’s Academic Plan is the principal reference point for all our activity and sets out our School ambitions, operating strategy and tone of delivery. It supports the University’s Corporate Plan which is focused on the application of scientific excellence in a financially viable operating environment.

There are established working practices, processes, systems and procedures that you will learn and must be used. Alterations to any of these must be agreed with the line manager. You can expect close support from the line manager in research, career development, mentoring, project management and publications/proposals.

Our performance and development review scheme provides a set of objectives agreed with the line manager for the year ahead and expected SMART targets.

Duties and responsibilities should be carried out with due regard and compliance with the General Data Protection Regulations, Health and Safety and the Equality Act 2010. All staff must conform to the requirements of the Financial Manual. The role will be subject to normal school and university systems and procedures. A very high emphasis is placed in particular on conformity with health and safety, environmental and ethical policies of the university.

There may be occasions when existing procedures may not cover new circumstances and where you need to work collaboratively with the Head of Department, academic staff and the Department administrators to develop new processes for the future.

You must respect the fundamental code of conduct for academic and scientific work. You may be privy to confidential information relating to staff and students and it is imperative that absolute discretion and confidentiality is shown at all times.

For specific projects, there will likely be documentation which will outline the tasks, milestones and deliverables related to the project. If applicable, the specific responsibilities of each of the participants in the consortium would also be outlined in a consortium agreement / grant agreement.

Impact

The role will be focused on meeting the aims and objectives of the project.

It is very important to conduct high quality research to maintain and enhance the reputation and performance of the institute and School. This will have impact on colleagues in related areas of research and could facilitate further internal and external collaborations.

No direct responsibility for budget or other staff / students is associated with this role. However, opportunities to co-supervise PhD / MSc students will be provided, and we expect all our post-doctoral researchers to take an active role within the Institute and more widely within the School to both inform others of their on-going work and to make best use of existing knowledge and expertise. There will also be scope to develop linked project bids and to work with colleagues in responding to research calls, as appropriate.
### Section 5
Am I suited to this role?

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Essential</th>
<th>Desirable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education / Qualifications</strong></td>
<td>PhD (or near completion) in Machine Learning, Data Science, Artificial Intelligence or related discipline</td>
<td>Experience and demonstrated success of delivering research results. Experience of supporting students, e.g. through research supervision Presentation at major national or international conferences</td>
</tr>
<tr>
<td><strong>Experience</strong></td>
<td>Research experience in developing solutions for processing sensory data (behavioral) High level analytical capability Track record of winning and delivering research projects sponsored by both the public and private sectors Preparing, editing and submitting high quality research outputs Peer-reviewed publication track record</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td>Sound knowledge of data science in the context of both analysis and modelling Close understanding of the contemporary challenges facing in the agricultural sector Knowledge of recent research developments in the AI and machine learning field Practical knowledge of the design and implementation of sensor and data interventions</td>
<td></td>
</tr>
</tbody>
</table>
| Skills / Aptitudes | Ability to communicate complex information clearly, and to encourage commitment to learn in others  
Proven ability to develop business opportunities and attract research income from multiple types of client.  
Excellent project and time management skills, ensuring that milestones and deliverables are achieved to time and to high quality  
Excellent oral and written communication skills and presentation skills, and good technical writing skills in English  
Excellent team-working and interpersonal skills  
Proven ability to undertake original research  
Ability and “drive” to produce high quality manuscripts, with others.  
Ability to find appropriate solutions to academic and technical problems  
Skills in motivating colleagues and students. |
| Values | Ability to demonstrate our values: Ambition, Impact, Respect and Community. |
| Other | The willingness and ability to travel and work within the UK and overseas with national and international partners |