

**Job Title:** Research Associate  
**Salary:** £38,205 to £44,263 per annum (pro rata)  
**Grade:** 7  
**Department:** School of Computing and Mathematical Sciences  
**Hours/Contract:** Full time or job share considered, Fixed term for up to 18 months  
**Job Family:** Research  
**Job Reference:** 9907

## Role Purpose

As part of a research grant, funded by the UK Space Agency (UKSA), you will work closely with an interdisciplinary research and development team on rapid information extraction for environmental remote sensing on board spacecraft by applying lightweight Convolutional Neural Network (CNN) models to multi-spectral satellite imagery. Two Earth observation applications will be addressed - traffic monitoring and wildfire detection. You will support all aspects of the CNN development, including testing with drone multi-spectral images and real-time deployment on a GPU-based embedded computing platform. You will also research and develop appropriate datasets and analysis approaches.

## Main Duties and Responsibilities

### Research

- Develop appropriate lightweight CNN models for traffic monitoring and wildfire detection.
- Research and develop suitable approaches to rapid information extraction on board spacecraft for traffic monitoring and wildfire detection.
- Collect suitable satellite multi-spectral image datasets for training and testing the CNN models.
- Develop drone multi-spectral image datasets for testing of the CNN models.
- Test the CNN models with drone multi-spectral images and real-time deployment on a GPU-based embedded computing platform.
- Optimize the lightweight CNN models for traffic monitoring and wildfire detection in terms of high accuracy and low footprint.
- Contribute to research outputs such as analyses, reports, co-authored journal articles/technical papers/book chapters relating to the work.

### Professional Development

- Duties and opportunities to engage in work that support your own professional development.

### Impact and Knowledge Exchange

- To engage positively and proactively in research impact.





## Leadership and Citizenship

- Contribute to the overall success of the research programme.
- Guidance to other team members both research staff and students.
- Providing mentoring and coaching research students.

## Internal and External Relationships

- Participate in regular meetings with members of the programme research team.
- Visit and work with Space Park Leicester (SPL) engineers on site to incorporate CNN software into the drone testing module.
- Occasionally communicate and liaise with other research collaborators, both nationally and internationally, under the instruction of your line manager.

## Planning and Organising

You will be required to effectively manage your time to plan your research activity and to deliver on the priorities of the project:

- Prioritise tasks within agreed work schedules.
- Plan for specific aspects of research incorporating issues such as deadlines, project milestones and overall research aims.
- Adapt daily and weekly plans to accommodate new developments and be flexible to the changing priorities of the research project.

## Qualifications, Knowledge and Experience

### Essential

- PhD or equivalent in appropriate discipline or the equivalent professional qualification and experience. \*
- Evidence of a contribution to peer-reviewed journal papers or equivalent e.g., technical report/writing a piece of software. \*
- Evidence of proven analytical problem-solving capability. \*
- Expertise in relevant approaches/models and analytical techniques and ability to develop new ones where required.

## Skills, Abilities and Competencies

### Essential

- Ability to demonstrate behaviours that are in accordance with the University values of inclusive, inspiring and impactful.
- Ability to demonstrate research potential and enthusiasm for the subject area and contribute to delivering high-quality research.





- Competence in Convolutional Neural Network development. \*
- Competence in image processing. \*
- Strong programming skills in Python. \*
- Excellent analytical and problem-solving skills. \*
- Evidence of continued personal development of subject expertise. \*
- Excellent communication skills – written and verbal. \*
- Ability to prioritise tasks within agreed work schedules. \*
- Evidence of working effectively as part of a team and the ability to work independently. \*

## Desirable

- Experience with satellite multi-spectral image processing.
- Experience working with a GPU-based embedded platform.
- Competence in a remote sensing application for Earth Observation

## ***\*Criteria to be used in shortlisting candidates for interview***

### Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

### Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

### Supporting University Activities

As a University of Leicester citizen, you are expected to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We expect all staff as citizens to work flexibly across the University if required.

### University Values

**Inclusive** - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

**Inspiring** - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

**Impactful** - As Citizens of Change we will generate new ideas which deliver impact and empower our community

### Equity and Diversity





We believe that equity, diversity and inclusion are integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equity support our efforts to attract a diverse range of high-quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equity, diversity and inclusion.

