University of Nottingham
UK | CHINA | MALAYSIA

Job title	Research Associate/Fellow	Job family and level	Research and Teaching Level 4 Training Grade/ 4
School/ Department	School of Computer Science	Location	University of Nottingham, Jubilee Campus / Rothamsted Research, Harpenden

Purpose of role

The project will make use of advanced imaging technologies across the partner institutions, including UAV drone imagery, hyperspectral images, CT scans and 3D point cloud data. The imaging platforms can capture hundreds of gigabytes of data per day, therefore modern AI techniques are essential if we are to efficiently keep up with this.

This post-doctoral researcher position which will develop new deep learning technologies for the analysis of plants different imaging modalities. A key focus will be around aerial and hyperspectral images, where often hundreds of wavelengths of light can be measured for a highly detailed view of fields. We are also interesting in the 3D structure of plants captured from above using LIDAR, or in CT. We will work closely with out project partners Rothamsted Research (https://www.rothamsted.ac.uk/) and the Earlham Institute (https://www.earlham.ac.uk/).

The candidate should have (or nearly have completed) a PhD in computer vision or a deep learning-related subject. The ability to work in an interdisciplinary team will be essential, ideally evidenced by previous work on interdisciplinary projects. The ability to develop new CNN models/architectures, as well as use existing architectures, is desirable. Knowledge of how these networks might be shared and deployed by scientists across institutions would be beneficial.

The candidate will primarily be based in the School of Computer Science, Jubilee Campus at the University of Nottingham, but may be required to spend some time at Rothamsted Research, Harpenden.

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year
1	Develop and evaluate potentially new CNN-based deep learning architectures and approaches, using the image sets supplied by Rothamsted, Nottingham and Earlham	60%
2	Work with our partners to optimise and alter plant phenotyping experiments to benefit the deep learning	10%
3	Build sharable or deployable versions of these tools to distribute to partners	5%
4	Attend project meetings, conferences etc. as required by the role	5%

5	To contribute to writing of any required progress reports and academic research papers.	10%
6	To present both the expertise of the project team and the capabilities of existing and newly developed products to our project partners and future collaborators in a manner that fosters opportunities for further development and exploitation.	5%
7	To co-ordinate the operational aspect of research networks, for example, arranging meetings and updating websites etc. and contribute to collaborative decision making with colleagues.	5%

Person specification

	Essential	Desirable
Skills	▪ Demonstrable strong programming skills. ▪ Excellent communication skills for dealing with practitioners and both experts and non-experts in their research area. ▪ Creativity and analytic thinking skills to carry out innovative and high-quality research. ▪ Ability to build relationships and collaborate with others, internally and externally. ▪ The ability to work in an interdisciplinary team.	▪ Programming experience of efficient code in a variety of languages such as C++/C/Java/C#. ▪ The ability to present numerical results and lead in the writing of academic publications. ▪ The ability to develop new CNN models/architectures, as well as use existing architectures, is desirable. ▪ Knowledge of how these networks might be shared and deployed by scientists across institutions would be beneficial.
Knowledge and experience	▪ Knowledge of relevant deep learning frameworks (PyTorch etc.) ▪ Experience managing and using large image datasets ▪ Extensive experience of deep learning, including development of new approaches as well as implementation of existing networks. ▪ Experience of working in a team on collaborative projects.	▪ Publications in peer reviewed venues appropriate to level. ▪ Experience working on a range of interdisciplinary projects. ▪ Experience of non-standard imaging modalities such as volumetric data, 3D data or hyperspectral data. ▪ Experience applying machine learning techniques for plant phenotyping.
Qualifications, certification and training (relevant to role)	▪ PhD (or near completion) in a computer vision or a deep learning-related subject.	

Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

Valuing people
Is friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.

Taking ownership
Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.

Forward thinking
Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.

Professional pride
Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.

Always inclusive
Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

Key relationships with others

Line Manager

Line Manager in Computer Science — Other Computer Science Investigators (PI/Cis)

Role Holder

Research Associate/Fellow

Key Stakeholder Relationships

Other researchers on project — Other project partners (outside CS)