

Candidate Information

Position:	Research Fellow
School/Department:	Institute for Global Food Security
Reference:	21/109396
Closing Date:	Thursday 9 December 2021
Salary:	£34,304 - £40,927 per annum
Anticipated Interview Date:	Monday 20 or Tuesday 21 December 2021
Duration:	Available until 28 February 2023

JOB PURPOSE:

An experienced and motivated postdoctoral scientist is sought to join the Kyriazakis Quantitative Animal Science group in the School of Biological Sciences at Queen's University Belfast. The group is a cross-disciplinary one with members coming from veterinary, animal behaviour, engineering and computer sciences. The successful candidate will undertake a senior role in the planning and delivery of research activities focused on the development of AI methods to enable automated quantification of animal behaviour through the application of Image Processing/Machine Vision and Machine Learning.

The Group focuses on the development and application of transformative technologies for the livestock industries, which include: 1) the early detection of health and welfare compromises in livestock, through the automated quantification of changes in their behaviour and 2) the application of machine learning to identify risk and protective factors associated with livestock management. This particular role focusing on (1), will be aligned with a major EU Horizon funded project that aims to investigate the contributions of enhanced animal health and welfare on reducing the need to rely on antibiotics in pigs and poultry (HealthyLivestock project <https://healthylivestock.net/>). The project enjoys input from the Electronics, Communication and Information Technology Institute (ECIT) of Queen's University Belfast, whose members are close collaborators.

MAJOR DUTIES:

1. Undertake and advise on the day-to-day research necessary to achieve Queen's University's aims within the EU-funded project HealthyLivestock.
2. More specifically, lead research that aims to capture, process, analyse, quantify and interpret animal behaviour images that occur during health and welfare compromises in pig systems. The aim is to develop machine learning models that automatically quantify these changes and use them as the basis for an early warning system.
3. Work closely with biologists and animal behaviourists, focussed on the achievement of the objectives of Healthy Livestock, and with collaborators based at ECIT.
4. Participate in group project meetings and external project meetings, including the development of progress reports describing and reflecting on the results of the project.
5. Assist with the planning, development, and publication of research work within the project – taking a lead where appropriate.
6. Prepare and present talks, posters and reports to disseminate the results of the research.
7. Participate in national and international conferences and workshops to present the results of the project to a wider audience and to learn about current advances in the field.
8. Assist with the preparation of (potentially collaborative) journal papers for publication of project findings.
9. Contribute to the supervision and training of post-graduate/undergraduate students and visiting researchers.
10. Participate in writing new research proposals that build on the expertise developed in this project; through this, start to develop an independent research profile.
11. Carry out routine administrative tasks associated with the day-to-day running of the research group in a communal lab/office setting
12. Any other duties appropriate to the grade and position as directed by Prof Ilias Kyriazakis and other senior members of the project team.

Planning and Organising:

1. Plan for specific aspects of research programmes. Timescales range from 1-12 months in advance and contribute to research group planning.
2. Coordinate and liaise with other members of the research group over work progress.
3. Plan for the use of research resources, laboratories and workshops where appropriate.
4. Plan own day-to day activity within framework of the agreed research programme.
5. Plan to contribute to formal project reporting, as per project schedule.
6. Plan to meet deadlines for journal publications and to prepare presentations and papers for conferences.
7. Coordinate and liaise with other members of the research group over work progress.

Resource Management Responsibilities:

1. Ensure research resources are used in an effective and efficient manner.
2. Provide guidance as required to support staff and any students who may be assisting with research.

Internal and External Relationships:

1. Liaise on a regular basis with colleagues and students, especially ones working on the HealthyLivestock project as well as group members and collaborators.
2. Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
3. Join external networks to share information and ideas, especially in relation to HealthyLivestock project.
4. Contribute to the School's outreach programme by establishing links with local community groups, industries etc.

ESSENTIAL CRITERIA:

1. Have or about to obtain a PhD in Image Processing/Computer Vision and Machine Learning or a related discipline.
2. At least 3 years recent relevant research experience in developing and applying Image Processing/Computer Vision and Machine Learning methods.
3. Good programming Skills in C/C++/C#/Matlab/Python.
4. Peer reviewed publications or preprints in the area of Image Processing/Computer Vision and Machine Learning.
5. Practical experience in the collection of data by a variety of sensors, such as video images or microphones, and in the processing of the data for analyses.
6. Practical experience in processing, recording and handling data sets, and performing statistical analysis.
7. Ability to contribute to broader management and administrative processes.
8. Methodical approach to project management and meticulous in regard to experimental procedures and record keeping.
9. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
10. Competent in giving effective and informative oral and poster presentations.
11. Ability to communicate complex information clearly.
12. Ability to build contacts and participate in internal and external networks.
13. Strong ability to work from own initiative and to work independently within the context of a research team.
14. Commitment to high quality research.
15. Demonstrable intellectual ability.
16. Ability to assess and organise resources.
17. Irregular hours including evening, weekend and other out-of-hours work may be a component of the research at times.
18. Must be willing to travel to national and international meetings and collaborative laboratories as required on an ad-hoc basis.

DESIRABLE CRITERIA:

1. Experience in computer-based methods for tracking individuals within a group, with or without additional sensors or explicit identification, such as experience in standard architectures of anchor-based object detectors.
2. Experience in advanced anomaly detection methods.
3. Experience in the application of image processing/computer vision methods to biological problems.
4. Strong publication record in peer reviewed journals.
5. Liaising with technical support team members.
6. Evidence of having presented at conferences (poster and/or oral presentations).