Research Trainee

Department: Computer Science

Hours of work: Part time | 10 hours per week

Contract type: Fixed term – up to 11 months until 31 March 2023

Salary: £26,341 per year (reduced pro-rata for part time working) | Grade 5
Introduction

The University of York and Universiti Teknologi Brunei are joining awarded a project on real-time data quality analysis and control for aquaculture prawn farming management, funded by British Council. The project offers a fixed term Research Trainee contract until 31 March 2023, focused on the development of a data quality analysis and control platform for monitoring the growth and health of aquaculture prawn.

The project aims to evaluate the use of underwater cameras attached to a drone to monitor the growth and health of aquaculture prawn. Its objectives are to improve the data quality of the video image captured from a freshwater aquaculture pond using deep learning and computer vision; and to design a control algorithm to maneuver the drone allowing the camera to provide sufficient information to represent the prawn behavior and its morphology.

The successful candidate should possess a good honours degree in Computer Science, Engineering or related discipline. It is a multi-disciplinary, cross-institution collaborative project, so evidence of the ability to engage in scientific research and work collaboratively as part of a team is required. Experience in relevant areas, including computer vision, image processing and analysis (object detection and segmentation), machine learning, hardware, and experience in developing software, would be crucial. Applicants with extensive practical experience using deep learning with Pytorch or TensorFlow are particularly welcome.

Main purpose of the role

- To conduct research under the supervision of senior colleagues and to contribute to the production of research
- To provide support to the research project, undertaking research work within the overall programme and assisting with the day to day operation of the project
- To assist in the identification and development of potential areas of research and the development of proposals for independent or collaborative research projects

Key responsibilities

(Role holders will be required to undertake some or all of the duties below)

- To conduct individual and collaborative research projects, duties to include: analysis and interpretation of research data; use of appropriate research techniques and methods; writing up of research results and dissemination through publications, seminar and conference presentations and public engagement and outreach activities; contributing to the identification of possible new areas of research
- To contribute to the intellectual development of the project and plan own activities within the overall research effort
- With the guidance of the project supervisor, to undertake a combination of literature searches/scholarly reading, desk and/or lab-based research, or other research activity. Using specialist knowledge, techniques and/or instrumentation as required.
- To document work appropriately and in accordance with research best practice.
- To work closely with the project supervisor to prepare work for dissemination, presenting preliminary findings at meetings within the research group as appropriate.
- Under the guidance of the project supervisor, to assist in writing articles, papers, reports or books as appropriate.
• To liaise and collaborate with students and researchers and relevant external contacts and organisations.
• To participate in the dissemination of research findings internally and externally at seminars, workshops and conferences.
• To consider the public engagement and impact of the project and take appropriate steps to maximise these with the support of the research leader
• To provide instruction to students as required
• To undertake appropriate organisational and administrative activities as delegated by the Research Supervisor. Examples may include: organising meetings, conferences and workshops; monitoring budgets and stock control; developing promotional or educational material, including website maintenance and development.
• To prioritise tasks within an agreed work schedule to ensure that the project is delivered on time.
### Person specification

<table>
<thead>
<tr>
<th>Qualifications</th>
<th>Essential / Desirable</th>
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</thead>
<tbody>
<tr>
<td>First degree in Computer Science, Engineering or equivalent experience</td>
<td>Essential</td>
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<tr>
<td>PhD in Computer Science, Engineering, or a related subject</td>
<td>Desirable</td>
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</tbody>
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**Knowledge**

- Knowledge of computer vision, image processing and analysis, and machine learning  
  Essential
- Knowledge of a range of research techniques and methodologies  
  Essential
- Has research expertise that will complement and enhance the department's research strategy and goals  
  Essential
- Research experience in object detection and segmentation  
  Essential
- Knowledge of robot control algorithms  
  Desirable

**Skills, abilities and competencies**

- Ability to undertake academic research. Examples may include preparing, setting up, conducting and recording the outcome of experiments or field work, the development of questionnaires and conducting surveys  
  Essential
- Ability to organise own research activities to agreed deadlines and quality standards  
  Essential
- Excellent IT skills software development skills  
  Essential
- Ability to assist in the supervision of student projects  
  Essential
- Ability to provide support to staff and any students who may be assisting with the research  
  Essential
- Excellent written communication in order to contribute effectively to the production of research reports and publications  
  Essential
- High level oral communication skills to enable the effective presentation of research progress and outcomes to key stakeholders  
  Essential
- Ability to communicate new and complex information effectively to a range of audiences  
  Essential
- Ability to develop internal and external contacts in order to enhance knowledge and understanding and form relationships for future collaboration  
  Essential
- Ability to work as part of a team and also to work independently using own initiative  
  Essential
- Competency to make presentations at conferences or exhibit work in other appropriate events  
  Essential
### Experience

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<tr>
<th>Experience</th>
<th>Status</th>
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<tbody>
<tr>
<td>Experience of carrying out both independent and collaborative research</td>
<td>Essential</td>
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<tr>
<td>Experience of writing up research work for publication</td>
<td>Essential</td>
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<tr>
<td>Experience of developing software components</td>
<td>Essential</td>
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<tr>
<td>Experience of systematically evaluating and validating theoretical results through robotics or AI models case studies and experiments</td>
<td>Desirable</td>
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<tr>
<td>Experience of working with non-academic partners</td>
<td>Desirable</td>
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### Personal attributes

<table>
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<tr>
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<th>Status</th>
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<tbody>
<tr>
<td>Interest in and enthusiasm for the subject matter of the project</td>
<td>Essential</td>
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<tr>
<td>Positive attitude to colleagues and students</td>
<td>Essential</td>
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<tr>
<td>A passion for conducting high quality research with impact</td>
<td>Essential</td>
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<td>Willingness to work proactively with colleagues in other work areas/institutions</td>
<td>Essential</td>
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<tr>
<td>Ability to plan and prioritise own work in order to meet deadlines</td>
<td>Essential</td>
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<tr>
<td>Commitment to personal development and updating of knowledge and skills</td>
<td>Essential</td>
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<tr>
<td>Attention to detail and commitment to high quality</td>
<td>Essential</td>
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