



Research Associate in CANOPY - Canopy-Aware Navigation & Optimal Precision sYstem

Job Ref: REQ260533

Project Description: This post is funded through InnovateUK developing the first autonomous canopy-zone-specific crop protection robot system for protected strawberry production. The project brings together Loughborough University, Antobot Ltd, NIAB and Wilkin & Sons to develop an autonomous robotic platform capable of precisely delivering biological and chemical crop protection treatments within commercial strawberry polytunnels.

Please note: This role is subject to full project funding being confirmed. At this stage, we cannot guarantee that the recruitment process will ultimately lead to an employment contract being offered.

Job Description

Job Family and Grade: Specialist and Supporting Academic Grade 6

Job Purpose

Working within the Centre for Autonomous Systems, the successful candidate will undertake research into robotic perception, autonomous manipulation and precision crop protection to enable targeted delivery of biological and chemical treatments within commercial strawberry polytunnels. The role will involve developing, integrating and validating novel perception and robotic control algorithms on a fully autonomous wheeled robotic platform equipped with a robotic manipulator. The successful candidate will work closely with academic and industrial project partners to integrate hardware and software, conduct laboratory and commercial field trials, and contribute to the delivery of project objectives through high-quality research outputs, technical reports and project meetings.

Job Duties

Research

The work entails, primarily, the following activities under the direction and supervision of Dr Matthew Coombes:

- To undertake high-quality research into robotic perception, computer vision and autonomous manipulation for precision agricultural robotics.
- To design and develop LiDAR-based perception algorithms for localisation within commercial strawberry polytunnels, including semantic understanding of canopy structures and environmental features.
- To develop stereo vision and visual servicing algorithms for accurate canopy-zone detection and fine positioning of a robotic manipulator.
- To develop robot arm motion planning, inverse kinematics and collision-aware control algorithms for safe operation within constrained agricultural environments.
- To integrate perception and manipulation software into an autonomous robotic platform using ROS-based software frameworks.
- To conduct laboratory and commercial field trials evaluating the performance of perception, localisation and robotic delivery algorithms.
- To collaborate closely with industrial partners, including attendance at project meetings, demonstrations, field trials and system integration activities.
- To prepare technical reports, deliver project milestones and contribute to InnovateUK reporting requirements.
- To publish research findings in leading international journals and conferences.
- To maintain accurate research records, software documentation and version-controlled code repositories.
- Where necessary, undertake travel within the UK to partner organisations and commercial trial sites.

Teaching

Teaching is not the primary purpose of this post. However, the successful candidate may contribute to the supervision of undergraduate and postgraduate project students where appropriate.

Other Related Activities and Functions

- To engage in relevant professional development and technical training.
- To contribute positively to the research activities of the Centre for Autonomous Systems.
- To comply with University Health, Safety and Environmental policies and procedures.
- To ensure all research activities are undertaken in accordance with relevant ethical, data management and intellectual property requirements.
- To undertake such other duties as may reasonably be requested consistent with the grade of the post.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility outlined in the document.

Organisational Responsibility

Reports to the: Project's principle investigator

Direct Reports: N/A

Budget Responsibilities: N/A

Person Specification

Your application will be assessed based on the essential and desirable criteria listed below.

Applicants are strongly encouraged to explicitly demonstrate how they meet each essential (and desirable) criteria at the application stage. The criteria that you need to demonstrate in your application will be listed as Stage 1 in the table below.

Stages of assessment are as follows:

- 1 – Criteria measured at Application
- 2 – Criteria measured at Test/Assessment Centre/Presentation
- 3 - Criteria measured at Interview

Essential Criteria:

Area	Criteria	Stage
Experience	Background in Robotics/ Autonomous systems	1,3
	Experience with robot manipulators and robotic perception	1,2,3
	Authorising original work for academic journal papers, conference papers or technical reports	1,3
Skills and abilities	Programming Skills, ROS/ROS2, C++ and/or Python	1,2,3
	Good written and oral communication skills	1,3
	Self-motivated with ability to meet deadlines	1,3
	Able to manage time and task effectively to meet project deadline and prioritise workload with minimum supervision	1,3
	Able to build and maintain effective working relationships with academic colleagues, students, and external partners to support collaborative research and communication of findings.	1,3
	Working knowledge of software packages ROS/ROS2, Gazebo, Rviz, Moveit	1,2,3
	Ability to write project reports and make technical presentations to industrial and academic research groups	1,3
	Knowledge of relevant Health & Safety issues	1,3
Training	Demonstrate evidence of having undertaken further training	1,2,3
Qualifications	PhD or very near completion in a relevant field	1,3
Other	Uphold and actively contribute to the University's commitment to Equity, Diversity and Inclusion.	1,3

Desirable Criteria: These are skills, experience and competencies that are additional extras that may be used to narrow the pool down if we receive a high volume of applications all meeting the essential criteria.

Area	Criteria	Stage
Experience	Robot manipulator control	1,2,3
	LiDAR Based localisation and or semantic segmentation	1,2,3
	Working in a high-quality academic research environment	1,3
Skills and abilities	Authoring original work, in the highest quality refereed academic journals	1,3

	A strong publication track record in robotic perception, localisation, robotic manipulators	1,2,3
Qualifications	PhD (or near completion) or equivalent research experience/training in a relevant discipline	1,3

Conditions of Service

The appointment will be subject to the [University's Terms and Conditions of Employment](#) relevant to the job grade.

Shared University Responsibilities

As a member of the Loughborough community, you are expected to:

- Take reasonable care of yourself, others and the environment, and to prevent harm by your acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Sustainability Policies & Procedures.
- Support and contribute to the University's commitment to principles of equity, diversity and inclusion (EDI) while carrying out all duties, behaving in a manner that treats others with dignity and respect and upholds every person's right to lawful freedom of expression, freedom of speech and academic freedom. Further information about EDI at Loughborough and our strategic aims is available on our website.

Our Purpose, Vision, and Values

Our purpose, Vision and Values underpin all that we do and shape how we work together at Loughborough.

We're proud to promote our values: **Adventurous, Collaborative, Creative, Authentic and Responsible**. Our people bring these values to life every day, and they are central to the positive and supportive culture that makes Loughborough unique.

If you join us, you'll be encouraged to bring these values to life in your own work and contribute to the positive, supportive culture that makes Loughborough unique.

Read more about our [vision and values](#).

Our Accreditations



We strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a [Bronze Athena SWAN award](#) which recognises the importance of support for women at all stages of their academic career.



We are proud to be a [Race Equality Charter Member](#). The Charter aims to improve the representation, progression and success of all minority ethnic staff and students within higher education and address issues of racism within higher education institutions (HEIs).



We are proud to be a Disability Confident Employer and have adopted a proactive approach to employing disabled people and to creating a more diverse workforce. We ensure that our recruitment processes are inclusive and accessible. We guarantee to offer an interview to all applicants who have declared themselves with a disability, provided they meet the essential criteria for a role. We proactively anticipate and

provide reasonable adjustments and support existing employees who acquire a disability or long-term condition to thrive in the workplace.

We are a real living wage employer, and our Living Wage Employer Mark shows our commitment to paying our staff according to the cost of living.



We are proud supporters of the [City of Sanctuary movement](#) and delighted to be recognised as a University of Sanctuary. This national network brings together, university staff, lecturers, academics and students, who together work to make Higher Education institutions place of safety, solidarity and empowerment for people seeking sanctuary.

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.