UNIVERSITY OF LINCOLN
JOB DESCRIPTION

JOB TITLE	Postdoctoral Research Associate in Robotic Fleet Coordination – Fixed Term
DEPARTMENT	Lincoln Institute for Agri-food Technologies
LOCATION	Riseholme Campus

JOB NUMBER	COS779	**GRADE**	7	**DATE**	Sep 2020

REPORTS TO	Dr. Gautham Das

CONTEXT

The University of Lincoln is seeking to appoint a Postdoctoral Research Associate to join the Lincoln Agri-Robotics (LAR) centre, the worlds first global centre of excellence in agricultural robotics. This position is externally funded by the Innovate UK -funded ISCF TFP science and technology into practice: demonstration project ROBOT HIGHWAYS. The project aims to demonstrate the use of fleets of robotic and autonomous systems that pick, transport and pack soft fruits while gathering and process data to maximise yield and minimise waste, at scale. The University of Lincoln's contributions to the project will include mobile robot autonomy; long-term fleet coordination; systems architecture development and system integration; learning and predicting activity patterns for better coordination; managing experimental work at test facilities on the University's Riseholme Agricultural Campus as well as at commercial soft-fruit farms.

JOB PURPOSE

The Research Associate is responsible for conducting research on the project, as directed by the Principal Investigator and Co-Investigators, and is expected to operate with a significant degree of autonomy.

The post holder will investigate, develop, demonstrate and experimentally evaluate approaches to enable long term autonomy in robotic fleets, working with both simulated and physical robots. The research will consider direct practical applications to working in open fields, poly-tunnels and/or greenhouses at University's Riseholme campus as well as commercial soft-fruit farms.

The post holder may be required to help supervise the work of more junior researchers.

KEY RESPONSIBILITIES

Literature Surveys

Undertake literature surveys and other investigations of the state-of -the-art, and prepare reports as required.

Programme of Research

Design and undertake programme of research under the direction of the Principal Investigator, demonstrating a significant level of autonomy.

Lead in the production of high-quality research outputs, including reports, papers and other publications of national/international standing.

Project Management

Perform project management activities, planning, scheduling, monitoring and reporting on progress of research projects.

Liaison and Networking

Identify and liaise with internal and external collaborators, and with colleagues in the Department, maintaining positive and effective working relationships.

Internal Research Activities

Participate in and help to organise internal research activities, including seminars, research meetings and conferences.

Continuous Professional Development

Undertake continuous professional development activities.

Grant Applications

Contribute to the production of grant applications.

Teaching Support

Aid in the supervision of postgraduate research students.

In addition to the above, undertake such duties as may reasonably be requested and that are commensurate with the nature and grade of the post.

ADDITIONAL INFORMATION

Scope and dimensions of the role

The postholder will be expected to design, conduct and manage original research in the area of the project, which encompasses underpinning research topics including (but not limited to):
- Coordination in multi-robot systems;
- Multi-agent task allocation and scheduling;
- Combinatorial optimisation and scheduling;
- Multi-robot path planning and traffic management;
- Learning systems for dynamic system coordination;
- Systems integration, including ROS.

Candidates should have, or expect to soon obtain, a PhD in a relevant area and hands-on experience with mobile ground robots. They must have excellent mathematical and coding skills

(C++/Python, ROS). Specific experience in the agriculture domain is preferred but not required. Postdoctoral positions will be fixed term for 2 years. The role offers the opportunity to engage in collaboration within an ambitious team, to work with experts in Lincoln Centre for Autonomous Systems (LCAS) and Lincoln Institute for Agri-food Technologies (LIAT), to work with state-of-the-art robotic hardware and software, and to benefit from excellent support to produce and disseminate original research contributions at the leading international conferences and journals. The post holder will be in a unique position to implement approaches that will be used in commercial agricultural farms.

Key working relationships / networks	
Internal	**External**
• Principal Investigator • Co-Investigators • Head of Research Centre • Head of School • Other research and academic staff within the school	• Research collaborators • Sponsors and clients

PERSON SPECIFICATION

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Selection Criteria	Essential (E) or Desirable (D)	Where Evidenced Application (A) Interview (I) Presentation (P) References (R)
Qualifications:		
PhD or equivalent (good candidates may be accepted with a PhD pending, subject to publication record)	E	A
Extensive knowledge specific to project/area	E	A/I
Experience:		
Extensive experience of relevant research methods	E	A/I
Authorship of research outputs of national/international standing	E	A/I
Experience of research in specific project area	E	A/I
Teaching support	D	A/I
Skills and Knowledge:		
Ability to design, conduct and project manage original research in the subject area	E	A/I
Excellent written communication, including the ability to write reports and research outputs	E	A/I
Ability to prioritise own workload and work to specified deadlines under pressure	E	A/I
Ability to communicate complex subjects orally	E	A/I
Skills specific to project/area	E	A/I
Competencies and Personal Attributes:		
Flexible approach to workload	E	I
Ability to work on own and as part of a team	E	I
Enthusiasm and commitment	E	I
Business Requirements:		
Travel between sites as appropriate	E	I

Essential Requirements are those, without which, a candidate would not be able to do the job. Desirable Requirements are those which would be useful for the post holder to possess and will be considered when more than one applicant meets the essential requirements.

Author	GD	HRBA	