



**UNIVERSITY OF LINCOLN
JOB DESCRIPTION**

JOB TITLE	Senior Research Software Engineer				
DEPARTMENT	LIAT				
LOCATION	Riseholme				
JOB NUMBER	COS746	GRADE	8	DATE	November 2021
REPORTS TO	Professor Elizabeth Sklar				

CONTEXT

The University of Lincoln is seeking to appoint a new Senior Research Software Engineer (SRSE) to join our ever-growing agri-robotics developments.

JOB PURPOSE

The University of Lincoln is significantly expanding its research and development in the area of Agricultural Robotics, with the growing need for professional software engineering expertise required to guide and support academic researchers in the area. The Senior Research Software Engineer (SRSE, a professional, non-academic position) will collaborate with world-leading researchers to design, develop and maintain high-quality code, ultimately enabling novel research to be performed more efficiently and reliably.

The SRSE will liaise closely with researchers to understand their requirements and to produce excellent solutions. The role involves leading the development of new or existing software in the areas of Robotics, Artificial Intelligence and Machine Learning, the management of software projects, and training of less experienced engineers.

As such, the role presents an opportunity to actively participate in research, applying innovative technologies and developments to diverse and meaningful challenges in the fast-paced application domain of Agri-Robotics.

In particular, expertise in the some of the following areas are beneficial to excel in the role:

- Continuous Integration
- Collaborative Software Development
- Systematic Code Reviews
- Agile Software Engineering Processes
- Cloud Computing and Cloud Robotics (PAAS, SAAS,...)
- Supporting research environments
- Robotics and real-time operation
- Distributed Processing, GPU computing, and High-Performance Computing clusters

The post-holder will regularly advise on and independently supervise the software development work of some junior researchers, including postgraduate students, and take a leading role in software quality assurance, such as code review and approval.

KEY RESPONSIBILITIES

Software and Project Developments

- Identify and capture user requirements and acceptance criteria, and deliver solutions to ensure they are met
- Design and implement techniques for the deployment and monitoring of software systems, whether on robots, cloud, or local resources
- Employ standard approaches to distributed and/or high-performance computing to novel domains and disciplines
- Ensure and facilitate long-term software maintenance
- Lead initiatives in software quality assurance, including code reviews and approval processes
- Define and communicate appropriate software engineering practices, including documentation, testing, issue tracking and version control

Project Management

- Perform project management activities, planning, scheduling, monitoring and reporting on progress of software development aspects of research projects.
- Manage software development projects, including planning, scheduling, prioritisation, risk management and resource allocation.
- Lead, as appropriate, software development projects and direct junior developers towards effective and efficient solution development

Liaison and Networking

- Cooperate with the research community at the Lincoln Centre for Autonomous Systems (L-CAS) and the Lincoln Institute for Agri-Food Technology (LIAT) to build reliable, usable and maintainable research software.
- Identify opportunities to contribute to research projects, form new collaborations
- Liaise with the university's ICT department to effectively allocate resources and develop solutions
- Initiate, develop and liaise with internal and external collaborators (industries), and with colleagues in the department, maintaining positive and effective working relationships.
- Promote the activities of the LAR team where appropriate, including publishing code, contributing to research articles and giving presentations in cooperation with researchers.

Internal Research Activities

- Participate in and help to organise internal research activities, including seminars, research meetings and conferences, in particular to contribute to training of researchers on aspects of software engineering
- Manage junior technical staff

Continuous Professional Development

- Undertake continuous professional development activities.

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

Applicants should have significant experience in software engineering and will usually possess a post-graduate qualification (PhD or MSc) in a relevant subject area. They must have excellent programming skills and a deep understanding of collaborative software development environments. Preference will be given to candidates who have experience working in industry settings and can demonstrate timely delivery of past projects.

Key working relationships/networks

Internal	External
<ul style="list-style-type: none">• Principal Investigators• Co-Investigators• Head of Research Centres• Other research, technical and academic staff within L-CAS and LIAT• ICT department representatives	<ul style="list-style-type: none">• Research collaborators• Industrial partners• Sponsors and clients



**UNIVERSITY OF LINCOLN
PERSON SPECIFICATION**

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LINCOLN

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Selection Criteria	Essential (E) or Desirable (D)	Where Evidenced Application (A) Interview (I) Presentation (P) References (R)
Qualifications:		
Postgraduate qualification or equivalent professional experience, i.e. significant support of research and/or software support in an academic or industrial setting	E	A
Extensive knowledge specific to software development in a research and/or industry setting	E	A/I
Experience:		
Experience as a researcher and/or research software engineer and/or software engineer	D	A/I
Measurement and monitoring of software quality and reliability	E	A/I
Architectural design of large-scale and/or complex software systems	E	A/I
Track-record in defining software development guidelines and processes	E	A/I
Maintaining and developing Linux-based systems and distributions	E	A/I
Contributing to the preparation of grant proposals and/or scientific publications	D	A/I
Training related to software engineering	D	A/I
Mentoring/leading of junior developers and/or researchers engaged in software development	D	A/I
Developing systems using high-performance computing facilities, in the cloud and/or locally managed	E	A/I
Skills and Knowledge:		
Advanced skills in at least two programming languages commonly used for research computing e.g. C/C++, Python	E	A/I
Knowledge of and commitment to software development best practice including issue tracking, testing, documentation, version control, build automation and continuous integration	E	A/I
Advanced knowledge of numerical methods, data structures and algorithms	D	A/I
Understanding of relevant cloud computing, virtualisation and container technologies	D	A/I

Expertise in several specialist areas of technical computing, e.g. OpenMP/MPI, CUDA/OpenCL, ROS, AWS, OpenStack, Scality	D	A/I
Knowledge of technologies and their respective strengths and weaknesses for the development of web, mobile and data handling applications	D	A/I
Ability to prioritise own workload and work to specified deadlines under pressure	E	A/I
Ability to communicate complex subjects orally and in writing	E	A/I
Ability to make and explain significant technical decisions regarding software design and implementation	E	A/I
Software project management, time tracking and task prioritisation skills	E	A/I
Experience managing junior staff	D	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 to represent the research centres and promote them also externally	E	I
Serious commitment to software quality and a strong attention to detail	E	I
Business Requirements:		
Travel between campuses as required	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	MH / ES / SP	HRBP	SP
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