**UNIVERSITY OF LINCOLN**
**JOB DESCRIPTION**

| | | | | | |
|---|---|---|---|---|---|
| **JOB TITLE** | Research Software Engineer in AI | | | | |
| **DEPARTMENT** | Centre for Defence & Security AI | | | | |
| **LOCATION** | Lincoln Campuses | | | | |
| **JOB NUMBER** | CHS238 | **GRADE** | 7 | **DATE** | July 2025 |
| **REPORTS TO** | Director, CDSAI | | | | |

**CONTEXT**

The Centre for Defence & Security AI (CDSAI) at the University of Lincoln is seeking to appoint a Research Software Engineer in Artificial Intelligence. CDSAI is a new university research and innovation centre launched in 2024, strongly linked to the UK's defence and security establishment (military, government, industry) at national and regional levels. The growth of the Centre is a university priority and investment is being made in hiring an excellent team to drive its success.

Applicants should hold a PhD or equivalent and must be able to demonstrate an excellent track record in one or more areas of Artificial Intelligence. Candidates are expected to have strong mathematical and programming skills (e.g. Python, C++), knowledge of computer vision and data mining tools (e.g. OpenCV, scikit-learn, tensorflow, pytorch) and be able to work on group software projects using modern tools and environments (e.g. github, docker, Ubuntu). Interest in applying AI within the defence and security sectors is essential, but experience in these domains is not required.

Successful candidates will be expected to be part of a team that conducts original research and delivers innovation projects in artificial intelligence applied in defence and security, working directly with industry and sometimes governmental or military collaborators. The specific responsibilities of the postholder will be the creation of AI-based software solutions to support this work, often working as part of a collaborative team.

To fulfil the role, you will need to be a confident and adaptable communicator (both in person and in writing) with clear understanding of research software engineering tools and principles, fundamental aspects of Dev Ops and high-performance computing. The position offers the opportunity to engage in collaboration within an ambitious team, to work with state-of-the-art equipment and software platforms and to benefit from excellent support to produce and disseminate original research contributions and otherwise make a meaningful impact. Involvement in securing additional funding for CDSAI will be encouraged, and centre members will be happy to support any such activity.

This post is funded for 18 months years in the first instance, with the option to extend if additional funding is secured. For informal enquiries about the post, please email the Centre Director, Prof. (of Practice) Fiona Strens (fstrens@lincoln.ac.uk) or AI lead Prof. Simon Parsons. Note that we are also advertising for a PDRA post. There are 2 posts available in total at this level and we will recruit the 2 best candidates from across both sets of candidates.

The University is committed to building a culturally diverse institution, where all staff and

students can flourish and feel valued for their contribution and individuality. We are encouraging talented people, whatever their background, to work and study here. All appointments are made on merit. Candidates must be willing to go through UK national security vetting processes.

The successful candidate will be part of CDSAI, a new and ambitious research and innovation centre. The team is small to start out and there will be a close pool of colleagues, focused on the development of AI-based software systems, to work with as well as a much larger and multi-disciplinary network of colleagues in the wider university. By joining at this stage, there is plenty opportunity for someone ambitious to have significant impact, take on leadership roles, secure high visibility and to take their career to the next level, knowing that there will strong support from the University.

## JOB PURPOSE

The CDSAI Research Software Engineer is responsible for supporting research on their assigned project(s), as directed by their supervisor, is expected to operate with a significant degree of autonomy, but not to operate as an independent researcher. Some of the work will be collaborative with colleagues from local companies. The post holder may be given opportunities to help supervise the work of more junior researchers (e.g. masters students) and provide guest lectures in taught modules, guided by their supervisor.

Well-organised and open-minded software engineers keen to build advanced AI systems and contribute to good research software development practices are strongly encouraged to apply.
Expertise at least in some of the following areas is beneficial to excel in the role:

- Containerisation (e.g. Docker)
- Software management and development tools and toolchains (e.g. git, GitHub, bloom)
- High-performance computing cluster tools
- AI software tools (e.g. scikit-learn, opencv, tensorflow, etc.)
- Unix-based operating systems (i.e. common flavours of Linux including Ubuntu)
- Programming languages typically used for AI software (python, C/C++, Java)
- Software documentation tools

The post-holder will be based in the newly-refurbished and well-equipped 'DecisionWorks' location on the main Lincoln campus (Brayford). This is part of a collaborative setting with researchers, local entrepreneurs, companies large and small, and defence stakeholders close-to-hand. Some flexibility on working patterns is acceptable if compliant with the University's policy on hybrid working, and some travel to external conferences and stakeholder meetings will be expected.

## KEY RESPONSIBILITIES

| Software Development and Data Management |
|---|
| • Collaborate with internal and sometimes external colleagues to identify and capture user requirements, validation and acceptance criteria for internal and external projects.<br>• Collaborate with with internal and sometimes external colleagues to design and implement AI-based software systems in the defence and security domains.<br>• Ensure and facilitate access to appropriate hardware facilities and research software tools.<br>• Communicate appropriate research software engineering practices, including documentation, testing, issue tracking and version control.<br>• Communicate appropriate research data management practices, including security, privacy, redundancy and sharing agreements (e.g. with project partners and stakeholders)<br>• Where appropriate, publish results of research software engineering and data management approaches in scientific venues |
| **Project Management** |
| • Participate in project management activities, including planning, scheduling, evaluating, reporting on progress and delivering training in research software engineering for CDSAI and associated colleagues at the University of Lincoln. |
| **Liaison and Networking** |
| • Cooperate with colleagues in CDSAI and the wider defence and security research community at the University of Lincoln to agree best practices and build reliable, usable and maintainable research software<br>• Liaise with the University of Lincoln's Digital Technologies (DT) department and appropriate/relevant external entities such as UK technology facilities (e.g. Archer) and/or commercial cloud providers (e.g. Amazon Web Services) to effectively allocate resources and develop solutions<br>• Identify and liaise with internal and external collaborators (universities and companies), and with colleagues in CDSAI, maintaining positive and effective working relationships.<br>• Promote the activities of the CDSAI team where appropriate, including publishing code, contributing to research articles and giving presentations in cooperation with team members. |
| **Continuous Professional Development** |
| • Undertake continuous professional development activities, especially where helpful or necessary to complete other duties as described above. |

**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 research software engineering and will usually possess a PhD in a relevant subject area. They must have excellent programming skills and a deep understanding of collaborative research software development environments and relevant areas of DevOps. |

| Key working relationships/networks | |
| --- | --- |
| **Internal** | **External** |
| • Research Supervisor (Line Manager)<br>• CDSAI leadership & team<br>• Head of School (SEPS)<br>• Other research and academic staff<br>• Administrative and technical staff | • Research collaborators, relevant academic and professional groups<br>• Sponsors and clients, relevant national, regional and international networks in the Artificial Intelligence and/or Defence and Security communities |

UNIVERSITY OF LINCOLN

**UNIVERSITY OF LINCOLN**
**PERSON SPECIFICATION**

| **JOB TITLE** | Research Software Engineer | **JOB NUMBER** | CHS238 |
|---|---|---|---|

| **Selection Criteria** | **Essential (E) or Desirable (D)** | **Where Evidenced Application (A) Interview (I) Presentation (P) References (R)** |
|---|---|---|
| **Qualifications:** | | |
| PhD or equivalent | **E** | **A** |
| Extensive knowledge specific to research and innovation projects related to the use of AI in applied contexts | **E** | **A/I** |
| **Experience:** | | |
| Extensive experience as a researcher and/or research software engineer | **E** | **A/I** |
| Measurement and monitoring of software quality and reliability | **D** | **A/I** |
| Architectural design of large-scale and/or complex software systems | **D** | **A/I** |
| Track-record in defining research software development guidelines and processes, including for testing, documentation and distribution | **D** | **A/I** |
| Maintaining and developing Linux-based systems and distributions | **E** | **A/I** |
| Knowledge of and commitment to software development best practice including issue tracking, testing, documentation, version control, build automation and continuous integration | **D** | **A/I** |
| Extensive experience as a researcher and/or research software engineer | **E** | **A/I** |
| **Skills and Knowledge:** | | |
| Ability to design, conduct and project manage original research in software engineering | **E** | **A/I** |
| Excellent written communication, including the ability to write reports and research outputs | **D** | **A/I** |
| Advanced skills in programming languages in use for AI research computing, i.e. C/C++, Python, Java | **D** | **A/I** |
| Containerisation (docker) | **E** | **A/I** |
| Ability to prioritise own workload and work to specified deadlines under pressure | **E** | **A/I** |
| Ability to communicate complex subjects | **E** | **A/I** |
| Ability to make and explain significant technical decisions regarding software design and implementation | **D** | **A/I** |
| Project management, time tracking and task prioritisation skills | **D** | **A/I** |
| **Competencies and Personal Attributes:** | | |
| Flexible and enthusiastic approach to work | **E** | **I** |

| | | |
|---|---|---|
| Ability to self-motivate and work alone and as part of a team | **E** | **I** |
| Enthusiasm for and serious commitment to high-quality work | **E** | **I** |
| Proactive, results-oriented and able to take initiative | **E** | **I** |
| Good interpersonal skills | **E** | **I** |
| Strong attention to detail | **E** | **I** |
| **Business Requirements:** | | |
| Flexible hours to accommodate occasional evening and weekend work | **D** | **A/I** |
| Ability to travel within the UK on occasion | **D** | **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** | SP | **PBP** | GPH |