



Job Title:	Research Software Engineer (Research Associate)
Grade:	7
Salary:	£39,355 to £45,413 per annum
Department:	School of Computing and Mathematical Sciences
Hours/Contract:	Full-time or job share considered, and fixed-term until 31 October 2026
Job Family:	Teaching and Research
Reference:	11912

Role Purpose

We are seeking a Research Software Engineer with expertise in scientific programming to contribute to the UKRI-funded project "Accelerating digital twin technology to deliver a prosperous net zero." The role involves developing and professionalising a digital twin model that integrates environmental simulations, machine learning and earth observation data.

As a Research Associate you will work collaboratively with researchers across disciplines to enhance the computational infrastructure of the digital twin, contribute to research outputs, and support the broader goals of research team in self learning digital twins. The team undertakes fundamental research in digital twins to achieve transformative impacts. Our research facilities include the £100M Space Park Leicester as well as the DiRAC National High Performance Computing Facility. The University of Leicester is leading the NERC National Centre for Earth Observation and co-lead of the UKRI Land Use for Net Zero, Nature and People (LUNZ) Programme.

Main Duties and Responsibilities

Research and Software development:

- Carry out novel research in physics informed machine learning models and self-learning digital twins.
- Design, implement, and maintain robust Python-based software for digital twin systems.
- Collaborate with researchers to translate scientific models into scalable, maintainable code.
- Integrate machine learning models and environmental simulations into a unified software framework.
- Process and analyse large-scale environmental datasets, including spatial-temporal data, weather data and satellite observations as well as the outputs of the digital twin. Experience in spatial-temporal data from Earth observation and spatial models is advantageous.
- Contribute to research publications, technical documentation, and grant proposals.
- Writing and improving software for machine learning systems, preferably in python at a professional standard to implement and refine the existing digital twin for agriculturally used drained peatlands. This work will include robust handling of exceptions, testing of the validity of user choices, refining and optimising the machine learning model execution and professionalising the computational side of the digital twin implementation. Experience with scientific computing libraries and frameworks (e.g., NumPy, SciPy, TensorFlow, PyTorch) will be a plus.

Project and Team Contribution:

- Manage computing resources and ensure efficient execution of software on HPC platforms.
- Participate in regular team meetings, provide technical updates, and support collaborative development.
- Mentor junior team members and contribute to internal code reviews and knowledge sharing.









Professional Development:

- Engage in continuous professional development, including technical training and research seminars.
- Attend mandatory training and contribute to the academic environment of the University.

Leadership and Citizenship:

- Guidance to other team members both research staff and students
- Pro-actively build networks and collaborations.
- Providing mentoring and coaching to Early Career Researchers and research students
- To engage in events and activities within the Institute for Environmental Futures and the University of Leicester more widely beyond the strict project work as appropriate

Internal and External Relationships

- Liaise with the Work Package lead, Principal Investigator, Administrators and Head of School.
- Attendance and presentation of work in progress at local, national and international meetings of relevance to the research program.
- Responsible for the project management of the responsibilities described above.
- Taking the lead for liaison with local and international collaborators where agreed.
- Effective communication with the line manager regarding progress on projects as required.

Planning and Organising

You will be required to effectively manage your time to plan your research activity and to deliver on the priorities of the project:

- Prioritise tasks within agreed work schedules;
- Plan for specific aspects of research incorporating issues such as deadlines, project . milestones and overall research aims;
- Adapt daily and weekly plans to accommodate new developments and be flexible to the changing priorities of the research project;

Qualifications, Knowledge and Experience

Essential

- PhD (or equivalent experience) with strong relevant experience to this project*
- Proven experience in scientific software development using Python.
- Knowledge and Experience with version control systems (e.g., GitHub/GitLab). *
- Demonstrated ability to contribute to research outputs (e.g., publications, software tools).*
- Strong analytical and problem-solving skills.

Desirable

- System integration skills involving computational models and AI
- Experience with spatial data processing, remote sensing, or environmental modelling.

LGBT+ AV







- Knowledge of machine learning frameworks (e.g., TensorFlow, PyTorch).
- Familiarity with JULES or similar environmental simulation tools. (the Joint UK Land Environment Simulator) as well as their integration with the digital twin

Skills, Abilities and Competencies

Essential

- Advanced Python programming skills. *
- Ability to work independently and collaboratively in a research environment. *
- Strong communication skills, both written and verbal. Proven competency in writing software for machine learning, digital twins or AI*
- Experience with Linux-based systems and HPC environments.

Desirable

- Experience with FORTRAN or C++
- Ability to understand and implement computational models in JULES (the Joint UK Land Environment Simulator) as well as their integration with the digital twin
- Ability to mentor and support junior colleagues

*Criteria to be used in shortlisting candidates for interview

Reason for Fixed Term Contract

The reason for the fixed term contract is stated in section 1.9 in the summary of contractual terms in your contract of employment.

Criminal Declaration

If you become an employee, you must inform your manager immediately, in writing, if you are the subject of any current or future police investigations/legal proceedings, which could result in a criminal offence, conviction, caution, bind-over or charges, or warnings.

Supporting University Activities

As a University of Leicester citizen, you are expected to support key university activities such as clearing, graduation ceremonies, student registration and recruitment open days. We expect all staff as citizens to work flexibly across the University if required.

University Values





Inclusive - We are diverse in our makeup and united in ambition. Our diversity is our strength and makes our community stronger.

Inspiring - We are passionate about inspiring individuals to succeed and realise their ambitions. We challenge our community to think differently, to get involved, and to constantly embrace new ideas.

Impactful - As Citizens of Change we will generate new ideas which deliver impact and empower our community

Equity and Diversity

We believe that equity, diversity and inclusion is integral to a successful modern workplace. By developing and implementing policies and systems that challenge stereotypes across all aspects of our work, we have a culture that recognises and values the diverse contributions of our staff which benefits everyone. Our strong values of inclusivity and equity support our efforts to attract a diverse range of high quality staff and students, and identify our University as a progressive and innovative workplace that mainstreams equity, diversity and inclusion.

