UNIVERSITY OF LEICESTER

Job Summary

Job Title: Lecturer in Distributed Machine Learning and Digital Twins
Grade: 8
Salary: £45,163 to £55,295 per annum, pro-rata if part-time
Department: Computing and Mathematical Sciences
Hours/Contract: Full-time or job share, permanent
Job Family: Teaching and Research
Reference: 10965

Role Purpose

To draw on academic experience to underpin and carry out activities across a range of areas of academic and university life, aligned with the University's strategic themes of 'World Changing Research', 'Research Inspired Education' and 'Our Citizens,' together with the University values.

The roles include an expectation of leadership, development and delivery of research and teaching in their respective areas, as well as contributions to the management of the School, College and University.

Main Duties and Responsibilities

World-Changing Research

- To make a significant contribution to research in Computer Science, consistent with the Distributed and High-Performance Systems group's existing activities in advanced distributed machine learning algorithms, high-performance AI systems, integration of machine learning in large-scale autonomous cyber-physical systems, performance and scalability optimization, trust-aware digital twins platforms, and quantum computing applications in machine learning.
- To engage in interdisciplinary research with UoL partners, preferably in Life and Health Sciences, Space Technology, or Climate, Earth Observation, Ecology or related areas.
- To produce research outputs of a high standard with best outputs internally and externally assessed as 4* (world-leading in terms of originality, rigour, and significance).
- To secure sustained external research income on an individual and collaborative basis, as appropriate to the field or discipline.
- To engage in research and enterprise leadership, making significant contributions to promoting and embedding an inclusive and respectful research culture.
- To lead on and contribute to the generation of income and external impact in your area in line with the enterprise agenda (including CPD, working with external organisations, both nationally and internationally, commercialisation, commissioned research and consultancy).
- To provide high quality PGR supervision and training, contributing to securing funding for postgraduate and early career researchers and increasing PGR recruitment within the subject discipline

Research Inspired Education

- Undertake research-led teaching on undergraduate and/or postgraduate taught courses, incorporating innovative teaching methods and the latest educational concepts.
- Contribute to the development, enhancement and achievement of the academic strategy in the School, through leading and engaging in activities/projects that drive innovation and have a beneficial impact
- Contribute to the development, revision and updating of programmes at undergraduate and/or postgraduate level, ensuring that they are inclusive, embed key skills, and incorporate sustainable development goals

- Contribute to teaching delivery and assessment to ensure consistent high quality teaching practice, providing timely formative student feedback and assessment for coursework and examinations
- Provide support and contribute to shaping a comprehensive range of student support initiatives at School, College, and/or University level, including, placement support, links with industry, personal tutor support, employability activities/projects and open days support
- Work with students to provide world class teaching and learning opportunities and an excellent student experience, regularly collecting and responding to student feedback
- Demonstrate wider educational impact through contributions to projects or scholarly discourse aimed at enhancing pedagogy or improving student outcomes
- Engage with scholarship and pedagogical research to continuously develop own teaching practice and that of others, leading to improved delivery and outcomes, with due regard for sector best practice

Our Citizens

- Contribute to initiatives and activities that inform national and international policies and decisions, generating a positive impact beyond the University and making a tangible contribution to society.
- Contribute to the practice or debate around policies or practice, based on research evidence and/or scholarly activity
- Participate in public engagement activities, including authoring articles in non-research publications and online, which raise the external profile of the University and share the benefit of Higher Education and research
- Actively engage with the academic discipline both nationally and internationally, undertaking roles on external committees, reviews and panels and/or contributing to conferences and volunteering initiatives which demonstrate impact beyond the University
- Participate in and undertake leadership roles at School, College, and/or University level contributing to management and administrative processes and committee structures

Internal and External Relationships

Collaborate with colleagues in the School and the University at large with interests in distributed and high-performance machine learning and digital twins, as well as research groups nationally and internationally. Support research students and other staff members to provide advice and guidance in area of expertise. Build and maintain contacts with healthcare providers, industry or other external partners and work with them on joint projects.

Planning and Organising

Plan and deliver a course of lectures to undergraduate, masters, or PhD students. Plan research grant applications, publication of high-quality papers, industry engagements and impact-bearing collaborations.

Qualifications, Knowledge and Experience

Essential

- A PhD or equivalent in computer science or a cognate discipline *.
- Expertise in high-performance and distributed AI systems including:
  - *Distributed machine learning algorithms and system architectures (including quantum systems)*

  - *Methods for exploiting modern system architectures for high-performance AI*
  - *Methods for embedding machine learning in large-scale deployment of distributed cyber-physical systems, particularly those comprised of components that operate autonomously*
  - *Methods to meet performance, latency, scalability and complexity demands of distributed machine learning architectures*
  - *Novel digital twins platforms that integrate real-world constraints to offer reliable and trust-aware machine learning models.*
  - *Quantum distributed computing, quantum machine learning*
- Evidence of research leading internationally in terms of originality, significance and rigour, that are consistent with the School that is aspiring to achieve the highest standards of excellence as evidenced by*
  - *Track record of publication of high quality research papers **
  - *Evidence of potential to engage in high-quality and impactful collaborative research, knowledge-transfer activities or consultancy with industry**
- Evidence of potential to engage in interdisciplinary research with other departments/schools and colleges*
- Experience or knowledge of higher education and ability to use a range of delivery techniques to inspire and engage students*
- Demonstrated ability or potential to generate external funding (through research grants, contracts and other sources) to support research programmes*
- Academic Teaching Qualification or commitment to gain the appropriate category of HEA Fellowship.

Desirable

- Evidence of collaborative research with leading distributed and high-performance machine learning research groups or companies in the UK or abroad.
- Experience in organising seminars, workshops, conferences or other research meetings.
- Experience in supervision of undergraduate or postgraduate students.

Skills, Abilities and Competencies

Essential

- High level of proficiency in English, sufficient to undertake research, teaching and administrative activities utilising English Language materials and to communicate effectively with staff and students.
- Proven ability or potential to generate external funding through research grants, consultancy, knowledge-transfer activities, or other sources to support research and its transition into applications.
- Proven ability or potential to initiate work independently and as part of a team, both on research and teaching programmes.
- Proven ability or potential to teach undergraduate and postgraduate students in lectures, tutorials and seminars, and to supervise postgraduate students.
- Ability to teach and supervise undergraduate and postgraduate students in core applied areas of computer science, including :
  - Cloud and Distributed computing
  - Databases

  - Programming Languages
  - Software Engineering
  - Software System Security
- Ability or potential to help develop curricula.
- Ability or potential to engage in outreach activities.
- Good interpersonal and personal skills and traits including:
  - Selflessly balancing the needs of colleagues and the organisation against your personal goals
  - Time management and prioritisation
  - Commitment to accountability, integrity, and trustworthiness
  - Ability to work in teams and to be able to balance organization and personal goals
  - Having a solution-focussed and problem-solving mentality

Desirable

- Ability to collaborate with existing staff in the School of Computing and Mathematics

Criteria to be used in shortlisting candidates for interview

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.