

Research Associate in Digital Twins for Transport

Job Ref: REQ260748

School/Department summary:

The Department of Computer Science at Loughborough University is one of the most well-established university computing departments in the UK. Founded in 1974, it has a long track record of developing skilled and highly employable graduates, and a reputation for cutting-edge research and strong industry engagement. In REF 2021, 91% of Loughborough's research was classed as world-leading or internationally excellent. The Department is home to a collaborative research community that works closely with industrial and international partners.

Project Description: VISION (Virtual Integrated Supply-chain Improvement with Optimized Networking) is an international research and development project funded by Innovate UK under the ITEA programme, bringing together industrial and academic partners from the UK, Spain, Türkiye and South Korea. The project will develop a connected, intelligent supply chain management system built around real-time digital twins of vehicles, materials and logistics assets, linked through common data models and supported by edge and in-network computing, for the construction, mining, aerospace and logistics sectors. The Research Associate will join Professor Posco Tso's team in the Department of Computer Science and will be responsible for the day-to-day delivery of Loughborough University's research contribution, working closely with the consortium partners.

Job Description

Job Family and Grade: Specialist and Supporting Academic Grade 6

Job Purpose

To conduct research in digital twin networking, edge computing and artificial intelligence (AI) for the VISION project, developing data models, a networking framework and edge computing solutions that allow real-time digital twins for transport and supply chain logistics to share data, AI models and simulation results securely, and integrating and validating these solutions with the industrial partners.

Job Duties

Research

- To undertake a literature review of the state of the art in digital twins for transport and supply chains, distributed digital twin frameworks and edge computing.
- To research and develop data models and a framework for connecting multiple digital twins, enabling the secure sharing of data, AI models and simulation results across the supply chain.
- To research and develop edge computing solutions for real-time digital twins, including the placement and orchestration of digital twin models and computation across edge and cloud resources.
- To evaluate the performance of the solutions developed, and to support their integration with the partners' components into the VISION Minimum Viable Product and their validation in industrial use cases.

Project delivery

- To be responsible for the day-to-day running of Loughborough University's part of the project, formulating detailed plans based on broad guidance from the Principal Investigator (PI).

- To feed back to the PI on progress, make recommendations for next steps, write regular progress reports and contribute to project deliverables.
- To maintain confidentiality at all times and ensure that intellectual property (IPR) agreements with the consortium partners are not violated.

Dissemination and development

- To write research papers suitable for publication in high-quality academic journals and conferences, and to present research findings at conferences and project meetings, including through international travel.
- To assist academic staff with the supervision of undergraduate, MSc and PhD project work.
- To engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility outlined in the document.

This is a full-time, fixed-term post for 12 months, funded by the VISION project, running from 1 January 2027 to 31 December 2027.

Organisational Responsibility

Reports to the: Professor Posco Tso, Professor of Computer Science

Direct Reports: N/A

Budget Responsibilities: N/A

Structure Chart: N/A

Person Specification

Your application will be assessed based on the essential and desirable criteria listed below.

Applicants are strongly encouraged to explicitly demonstrate how they meet each essential (and desirable) criteria at the application stage. The criteria that you need to demonstrate in your application will be listed as Stage 1 in the table below.

Stages of assessment are as follows:

- 1 – Criteria measured at Application
- 2 – Criteria measured at Test/Assessment Centre/Presentation
- 3 - Criteria measured at Interview

Essential Criteria:

Area	Criteria	Stage
Experience	Background in Computer Science or a related discipline	1
	Research or development experience in one or more of AI/machine learning, computer networking or distributed systems	1,3
	Software development on Linux/Unix platforms	1,3
	Authoring original work for academic journal papers, conference papers or technical reports	1
Skills and abilities	Good programming skills in at least one language (e.g. Python, C/C++, Java or Go)	2,3
	Sound knowledge of AI/machine learning, computer networking and distributed systems principles	3
	Good written and oral communication skills	1,3
	Self-motivated with ability to meet deadlines	3
	Able to manage time and task effectively to meet project deadline and prioritise workload with minimum supervision	3
	Able to build and maintain effective working relationships with academic colleagues, students, and external partners to support collaborative research and communication of findings.	3
	Working knowledge of open-source software packages for AI, networked or distributed systems	3
	Ability to write project reports and make technical presentations to industrial and academic research groups	2,3
	Knowledge of relevant Health & Safety issues	3
Qualifications	PhD (or near completion) in Computer Science or a related discipline	1
Other	Demonstrate an ability to behave in a way that adheres to equitable and inclusive working practices, while respecting diversity of thought and supporting freedom of speech and expression.	1,3

Desirable Criteria: These are skills, experience and competencies that are additional extras that may be used to narrow the pool down if we receive a high volume of applications all meeting the essential criteria.

Area	Criteria	Stage
Experience	Research experience in digital twins, edge computing or the Internet of Things	1,3

	Research or development experience in transport, logistics or supply chain applications	1,3
	Working on collaborative research projects with industrial partners	1,3
Skills and abilities	Software development using containerisation and orchestration tools (e.g. Docker, Kubernetes)	1,3
	A strong publication track record in AI, computer networking or distributed systems	1

Conditions of Service

The appointment will be subject to the [University's Terms and Conditions of Employment](#) relevant to the job grade.

Shared University Responsibilities

As a member of the Loughborough community, you are expected to:

- Take reasonable care of yourself, others and the environment, and to prevent harm by your acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Sustainability Policies & Procedures.
- Support and contribute to the University's commitment to Equity, Diversity, and Inclusion (EDI), while carrying out all duties in a way that respects these principles and upholds the right to free expression. Further information about EDI at Loughborough and our strategic aims is available on our website

Our Purpose, Vision, and Values

Our purpose, Vision and Values underpin all that we do and shape how we work together at Loughborough.

We're proud to promote our values: **Adventurous, Collaborative, Creative, Authentic** and **Responsible**. Our people bring these values to life every day, and they are central to the positive and supportive culture that makes Loughborough unique.

If you join us, you'll be encouraged to bring these values to life in your own work and contribute to the positive, supportive culture that makes Loughborough unique.

Read more about our [vision and values](#).

Our Accreditations



We strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a [Bronze Athena SWAN award](#) which recognises the importance of support for women at all stages of their academic career.



We are proud to be a [Race Equality Charter Member](#). The Charter aims to improve the representation, progression and success of all minority ethnic staff and students within higher education and address issues of racism within higher education institutions (HEIs).



We are proud to be a Disability Confident Employer and have adopted a proactive approach to employing disabled people and to creating a more diverse workforce. We ensure that our recruitment processes are inclusive and accessible. We guarantee to offer an interview to all applicants who have declared themselves with a disability, provided they meet the essential criteria for a role. We proactively anticipate and provide reasonable adjustments and support existing employees who acquire a disability or long-term condition to thrive in the workplace.



We are a real living wage employer, and our Living Wage Employer Mark shows our commitment to paying our staff according to the cost of living.



We are proud supporters of the [City of Sanctuary movement](#) and delighted to be recognised as a University of Sanctuary. This national network brings together, university staff, lecturers, academics and students, who together work to make Higher Education institutions place of safety, solidarity and empowerment for people seeking sanctuary.

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.