

Job Description & Person Specification

Academic and Research roles

JOB DESCRIPTION

Job title	KTP Associate – Research Scientist (Software Engineering and AI)
School/Department	CEPS
Division (if applicable)	Computing
Programme (if applicable)	
Location	UWS Paisley Campus / Kooltech Ltd (Company Glasgow based)
Reporting to	Professor Muhammad Zeeshan Shakir
UWS grade	AC2
FTE	1

Job summary

About the project:

This Knowledge Transfer Partnership (KTP) project between the University of the West of Scotland (UWS) and Kooltech aims to design and develop a cutting-edge digital tool that leverages AI to transform the way air-source heat pump (ASHP) systems are designed, installed, and maintained. By enhancing engagement with all stakeholders—be it during installation, design, or maintenance phases—we aim to fully realize the benefits of this technology. This initiative will not only streamline operations and boost user satisfaction but also reinforce Kooltech's position as a leader in sustainable heating solutions in the UK. Initially targeting the commercial heating market, the innovative knowledge and systems developed will also extend to the domestic property market, maximizing the impact for both Kooltech and the wider Wolseley group. Embrace the opportunity to be part of a transformative project that addresses carbon challenges and sets new standards in the industry.

About the Company

Established in 1979, Kooltech is a large UK distributor of refrigeration and air conditioning products (£65m revenue in 2023), providing both standard and bespoke design solutions for refrigeration, heat pump, and air conditioning applications. In 1994, Kooltech began distribution of Mitsubishi Electric's full range of air conditioning products. As part of the Wolseley Group, Kooltech continues to innovate and expand its market presence. <https://www.kooltech.co.uk/>

About UWS

University of the West of Scotland is one of Scotland's largest and most dynamic modern universities. Our reach across the country, together with our London campus, means that

UWS is a significant force in global knowledge creation, innovation, and a leading provider of undergraduate, postgraduate and research degree education. Our degrees provide students with a transformational experience; equipping them with highly sought-after graduate skills that set them up for global success in world-leading sectors, industries and businesses.

With cutting-edge courses, modern pedagogy and practical knowledge, we enable our students and staff to experience the joy of learning, teaching, research and innovation, and apply their knowledge for the benefit of others.

UWS is officially ranked by Times Higher Education in the top 200 universities worldwide under 50 years old (2023 Young University Rankings).

The School of Computing, Engineering & Physical Sciences offers industry-focused teaching and research opportunities that deliver solutions to real-world problems. You will join an innovative and supportive team, playing a key role in driving forward our ambition to deliver transformational change, through outputs that have a tangible, early and positive impact on society across the globe. Our students benefit from state-of-the-art facilities, extensive expertise in research and development, and our robust collaborations with multinational companies across the world.

About AVCN and DCISF

The Artificial Intelligence, Virtual Communications, and Networks (AVCN) research institute at UWS is a leader in AI, IoT, Big Data, 5G/6G Networks, and Communication technologies, with six centres and groups focusing on these areas. The institute boasts over 900 publications, including 300 within the last five years, and supports large-scale funding projects totalling more than £40m. It is the largest research entity at UWS, with a track record that includes:

30+ academic staff and 30+ PhDs/Researchers

4 REF UoA11 Leads

Over 900 peer-reviewed publications, with over 300 in the last five years and 10 best paper awards

Coordinator/partner of big externally funded research projects

Over 40 projects with a total worth over £40m

Over 15 ongoing research and innovation projects

Digital Connectivity & Innovation for Sustainable Futures (DCISF), an integral research group within AVCN, stands at the forefront of digital innovation. With substantial funding from prestigious entities such as NIHR, QNRF, EU programs, UK and Scottish Governments, British Council, and Innovate UK, our group has spearheaded groundbreaking research and received recognition through numerous awards. Among our accolades are the Fred W. Ellersick Award in 2021, Innovate UK Award of Excellence in 2023 and 2018, and several best research paper awards. At DCISF, our vision is clear: to revolutionize automation for a sustainable future. We are committed to pioneering digital connectivity solutions that are reliable, robust, and resilient, while simultaneously driving innovations that enhance efficiency, minimize environmental impact, and elevate overall quality of life. <https://dcisf.com/>

About the KTP Program

This position forms part of the Knowledge Transfer Partnership (KTP) funded by Innovate UK. It's essential you understand how KTP works with business and the University, and the vital role you will play if you successfully secure a KTP Associate position. Please visit: www.ktpws.org.uk or contact Stuart Mckay (stuart.mckay@uws.ac.uk).

The KTP program aims to help businesses in the UK to innovate and grow by linking them with academic or research institutions. This program supports the placement of a KTP Associate to work on a strategic project for a company, guided by both company and academic supervisors.

People & finance responsibilities

People	NA
Finance	NA

Key activities

- Software Development for Digitising the Workflow of Air Source Heat Pump (ASHP) Design, Installation, Commissioning, and Monitoring
- Develop software to streamline ASHP system design, specification, procurement, installation, and commissioning.
- Development of Database for the Platform/Software and Integration of the System
- Create and manage databases to support the software and platform functionalities.
- Integrate IoT and AI-based Solutions for Remote Monitoring, Diagnostics, and Prognostics of ASHP Systems
- Implement IoT and AI-based solutions for remote monitoring, diagnostics, and prognostics.
- Report Writing, Project Management, and Communications with Stakeholders and Teams
- Manage the project lifecycle, prepare reports, and communicate effectively with stakeholders and team members.

Job scope

Planning and organising	<ul style="list-style-type: none"> • Plan and organise own work schedules within time frames, working on own initiative and prioritising workload to ensure completion of research tasks within project deadlines. • Be responsible for working to deadlines and to alerting principal researcher/s to progress against deadlines. • Participate in project team meetings and contribute to project planning and implementation. • Seek guidance on actions to cope with unforeseen disruption or delay to project. • Liaise with the key stakeholders online and offline as required.
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Decision making	<ul style="list-style-type: none"> • Deal with problems, as part of a team, which may affect the delivery or the achievement of research objectives and deadlines. • Contribute to decisions affecting the work of the team. • Analyse and interpret the results of research and contribute to the generation of outputs. • Working Relationships – Liaison and Networking • Collaborate with research teams from collaborating institutions. • Develop knowledge and understanding, and contacts for future collaboration where appropriate.
Working relationships – <i>Liaison and Networking</i>	<ul style="list-style-type: none"> • Collaborate with research teams from collaborating institutions. • Develop knowledge and understanding, and contacts for future collaboration where appropriate.
Working relationships – <i>Communication</i>	<ul style="list-style-type: none"> • Communicate effectively with team members and stakeholders. • Prepare reports and documentation as required. •
Working relationships – <i>Teamwork</i>	<ul style="list-style-type: none"> • Work collaboratively with a multidisciplinary team. • Share knowledge and experience with colleagues.
Working relationships – <i>Pastoral Care</i>	<ul style="list-style-type: none"> • Support MSc/PhD students as part of joint project deliverables.

PERSON SPECIFICATION

Qualifications

			Evidence A = Application I = Interview
Essential	QE1 QE2	Minimum MSc/MEng in Computing Science, Electrical/Electronic Engineering, Computer Engineering, or related fields.	
Desirable	QD1 QD2	PhD in Electrical/Electronic Engineering or Computer Engineering/Science or Mathematics or related areas. Experience	

Experience

			Evidence A = Application I = Interview
Essential	EE1 EE2 EE3 EE4 EE5	<p>Experience in test-driven and agile software development methodologies, software documentation, version control, technical writing, and user training.</p> <p>Experience in machine learning and artificial intelligence software libraries (e.g., Scikit-learn, TensorFlow, Keras) with proven track record in developing and implementing feature extraction and detection algorithms.</p> <p>Experience in data stream visualisation, system automation, and user interface development, including dashboards/APP.</p> <p>Experience in technical writing and preparation of reports and documentation.</p> <p>Experience in Python, Java, C/C++; hands-on experience in database management systems (e.g., MySQL); product commercialization/certification experience (e.g., IP and risk management).</p>	
Desirable	ED1 ED2	<p>Experience in IoT application for industrial systems monitoring, testing, and optimization.</p> <p>Experience with BIM integration and advanced diagnostics & prognostics.</p>	

Skills

			Evidence A = Application I = Interview
Essential	SE1	Excellent communication, writing, and interpersonal skills, with an ability to present complex information in an accessible way.	
	SE2	Integration of data analysis and visualisation techniques for user interface development.	
	SE3	Analysis, design, and development of system-level solutions with strong software-hardware integration/optimisation.	
Desirable	SD1	Flexibility to adapt to changing environments.	

Knowledge

			Evidence A = Application I = Interview
Essential	KE1	Understanding of software development	
	KE2	Understanding of AI/Machine learning and data analytics.	
Desirable	KD1	Understanding IoT and applications of remote conditions monitoring.	

Behaviours

			Evidence A = Application I = Interview
Essential	BE1	Ability to work professionally and independently and as part of a team.	
Desirable	BD1	Enthusiasm to learn new technologies.	

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