Post Details	
Faculty/Administrative/Service Department	Faculty of Engineering & Physical Sciences (FEPS) Centre for Vision, Speech and Signal Processing (CVSSP)
Job Title	Research Software Engineer in Content Authenticity

Job Family	Technical and Experimental	**Job Level**	4
Responsible to	Project Principal Investigator		

Job Purpose Statement

A full-time Research Software Engineer in Content Authenticity and Media Provenance. This is an excellent opportunity for an R&D engineer to further develop their software skills within the societally important area of content authenticity, helping to fight fake news and misinformation and improve creative reward and recognition in the age of generative AI. The engineer will work with data management, AI model training and inference, and open standards/metadata. They will work collaboratively within an EPSRC project ('DECaDE') that aims to develop scalable solutions within the field of visual content authenticity for the future creative economy.

The role will be based in the Centre for Vision, Speech and Signal Processing (CVSSP) within the School of Computer Science and Electronic Engineering at the University of Surrey, and we offer the opportunity for hybrid working – some time on campus and some from home. We welcome applicants who wish to pursue the role through flexible working patterns.

Key Responsibilities

1. Research and develop software modules for content authenticity and media provenance, working with data management, AI model training and inference, and open standards/metadata.
2. Contribute to deliverables and milestones relating to the technical design and development of the project's architecture and modules.
3. Contributing to iterative deliverables for the projects such as technical reports, software integrations and source code releases, which need to be ready at their prescribed deadlines throughout the project lifetime.
4. Travel abroad for project meetings and dissemination events.
5. Actively liaise with consortium partners in the project, as this is a collaborative project.

N.B. The above list is not exhaustive.

All staff are expected to:

- Positively support equality of opportunity and equity of treatment to colleagues and students in accordance with the University of Surrey Equal Opportunities Policy.
- Work to achieve the aims of our Environmental Policy and promote awareness to colleagues and students.
- Follow University/departmental policies and working practices in ensuring that no breaches of information security result from their actions.
- Ensure they are aware of and abide by all relevant University Regulations and Policies relevant to the role.
- Undertake such other duties within the scope of the post as may be requested by your Manager.
- Work supportively with colleagues, operating in a collegiate manner at all times.

Help maintain a safe working environment by:

- Attending training in Health and Safety requirements as necessary, both on appointment and as changes in duties and techniques demand.
- Following local codes of safe working practices and the University of Surrey Health and Safety Policy.

Elements of the Role

Research and Software Development

- Conduct research and software development within the context of a collaborative research project, comprising of partners from research and industry organisations. The project aims to create new technologies for tracing the origins of visual media used to create other assets or productions, and rewarding those creative contributions through micropayments or other reward schemes. The project will leverage both distributed ledger technology and AI.

- Develop data processing pipelines for visual media in the training of generative AI models, and the registration of that training data through open standards (such as C2PA) and distributed ledger technology (DLT) so that rights over the use of media, as well as owernship, may be asserted by data creators and recognized in the downstream outputs of generative AI models trained on those data.
  - Solve problems within the context of IoT data value chains, such as data quality improvement and semantic enrichment using AI and Machine Learning technologies. The focus is on the area of data analysis and management, improving data asset quality through data engineering and analysis orchestration pipelines.
  - Solve problems related to the barriers to information and data exchange such as interoperability, and also challenges of managing datasets/data streams and information about them throughout the lifecycle of an AI model.
- Develop metadata pipelines for AI training systems and efficient mechanisms for search and discovery of data, and considering problems such as the scalability of data and metadata on distributed ledgers which are normally more resource constrained.
- Formulate and create tools and systems to facilitate above, which will be initially validated against a set of real-world creative industries use cases.

Software Testing

- The post holder is expected to verify through debugging, troubleshooting and unit testing the correct operation of the produced code.
- The post holder is also expected to verify operations of the developed software and its integration with other software modules from other partners.
- The post holder is required to test their work both with validation suites to ensure compliance with standards.

Continuous Delivery and Improvement

- The post holder will be responsible for deploying in the project's infrastructure and periodically update its developed codebase in accordance with the technical roadmap and release updates.
- The post holder is expected to be responsible and proactive in resolving issues, identifying solutions and fixes for the deployed software due to feedback from the Use Case deployment or decisions by project consortium regarding changes to requirements.
- The post holder is expected to continuously learn and improve his technical development skills and knowledge about mobile networks.

Accountability

- The post holder is required to document and maintain its codebase through documentation and version control software (i.e. GitLab, GitHub), in both production and development for CI/CD pipelines.
- The post holder is required to develop automation pipelines for software development and machine learning processes, and deployment.
- The post holder needs to document software architecture, installation procedures, deployment configurations as well as provide support to peers and third parties requiring information.
- The post holder needs to have a can-do aptitude, be proactive and independent and work in coordination and guidance from the Project Investigator and senior peers.

Supplementary Information

- A talent for technical problem-solving is a must. You will encounter a wide range of technologies and data and will be given many opportunities to further build on your skills. It is vital that you enjoy exploring new areas and learning new technologies. You will have opportunities to work on several areas within the project, that include data engineering, AI/ML technologies, distributed ledger technology (DLT) and metadata standards such as C2PA.

Person Specification		
Qualifications and Technical Skills		
Relevant degree (in Electronics Engineering or Computer Science)		E
Technical Competencies (Experience and Knowledge) This section contains the level of competency required to carry out the role (please refer to the Competency Framework for clarification where needed and the Job Matching Guidance).	**Essential/ Desirable**	**Level 1-3**
Experience with programming in Python, or JavaScript in the context of computer vision and artificial intelligence including development of web-based demonstrators of these technologies.	E	3
Experience in working in tandem with researchers to implement scaled-up prototypes, open source releases and demonstrators of research work in the field of AI or Computer Vision.	E	3
Experience in developing workflows for data and metadata management within the context of AI training.	E	3
Experience in AI model development/optimisation and workflows for visual (image, video) data.	E	3
Experience with tools for source code management, automation pipelines for software development and machine learning processes, and deployment.	E	2
Strong critical thinking skills and ability to develop innovative solutions.	E	2
Experience with virtualisation tools such as Docker or AWS.	E	2
Ability to communicate effectively and work efficiently within a research and development team.	E	2
Ability to take initiative, learn how to use the necessary tools for the research, and work independently, and collaboratively for integration tasks.	E	2
A PhD in Computer Science, Electronics Engineering, Mathematics, or other closely related area.		D
Contributions to peer-reviewed publications, or other similar output.	D	1
Experience with developing tools and applications for content provenance, authenticity or media forensics.	D	1
Core Competencies		**Level 1-3**
Communicator		3
Flexible		2
Team Player		3
Proactive		3
Problem Solver		3
Creative and Analytical Thinker		2
Autonomous		3
This Job Purpose reflects the core activities of the post. As the Department/Faculty and the post holder develop, there will inevitably be some changes to the duties for which the post is responsible, and possibly to the emphasis of the post itself. The University expects that the post holder will recognise this and will adopt a flexible approach to work. This could include undertaking relevant training where necessary. Should significant changes to the Job Purpose become necessary, the post holder will be consulted and the changes reflected in a revised Job Purpose.		

Organisational/Departmental Information & Key Relationships

Background Information

The Centre for Vision, Speech and Signal Processing (CVSSP), part of the Department of Electronic and Electrical Engineering at the University of Surrey, is an International Centre of Excellence for research in Audio-Visual AI and Machine Perception, with 180 researchers, a grant portfolio of £30M (£21M EPSRC) from EPSRC, EU, InnovateUK, charity and industry, and a turnover of £7M/annum.

Research at CVSSP has pioneered new technologies for societal and economic impact, with applications spanning themes including healthcare, security, entertainment, robotics, autonomous vehicles, communication and sensory data analysis. For data, CVSSP addresses the application of AI for the creative industries and we partner with several organisations in this space including the BBC and Adobe.   The role is within DECaDE; a large multidisciplinary project led by CVSSP but also involving several other research centres including the business school and cyber security centre at Surrey, as well as the institute for design informatics and law school at Ediburgh University.   DECaDE are investigating alternative uses for distributed ledger technology (DLT), including safe online identity, healthcare, and media and data provenance. The new approach of fusing DLT (trusted data) and AI (making sense of that data), is a common thread across all CVSSPs projects in DLT and a unique perspective to this emerging technology pioneered by the University of Surrey and underpinning all of DECaDE's work.

CVSSP has an AI compute facility with 240 GPUs for deep learning and >1PB of high-speed secure storage. National standing is evidenced by sustained EPSRC investment, including two Programme Grants (2013-19, 2015-21), Prosperity Partnership (2021-25), Digital Economy Centre DECaDE (2020-25), three Platform Grants in Audio-Visual Research (2003-08, 2008-14, 2017-22), and as a lead partner of the BBC Data Science and Audio Research partnerships.

The centre has an outstanding track record of pioneering research leading to successful technology transfer with UK industry and spin-out companies. CVSSP also leads the People Centred AI Institute (PAI) interdisciplinary network of over 300 research in AI and machine learning across the University of Surrey.

Department Structure Chart