| | | Last Updated 13/01/2026 |
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| **Job Title** | AI Research Software Engineer | |

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| **Faculty/ Department** | FEPS, Comp Sci & Elec Eng | **Legal Entity** | University of Surrey |
| **Job Family** | Technical and Experimental | **Job Level** | L04 |
| **Reports To** | Professor Adrian Hilton, Principal Investigator or Surrey leadership team delegate. | **Line Manages (role title(s))** | No line management responsibilities |

**Job Statement**

The post holder will take a significant role in planning, coordinating and implementing research programmes and, where appropriate, commercial and consultancy activities. They will take lead responsibility for a small research project or identified parts of a large project.

**Key Responsibilities** This is not designed to be a list of all tasks undertaken but the main responsibilities (5 to 8 maximum)

1. Supporting AI4ME R&D activities including the planning and carrying out of specific activities, often in collaboration with colleagues and partners.

2. Leading and collaborating with the AI4ME team, partner universities and industry across on joint research, development and integration to develop new tools and technologies.

3. To take a significant role in planning, coordinating and implementing research programmes and, where appropriate, commercial and consultancy activities. To take lead responsibility for a small research project or identified parts of a large project. To make decisions about research programmes and methodologies, often in collaboration with colleagues, and to resolve the problems of meeting research objectives and deadlines.

4. To develop new concepts and ideas to extend intellectual understanding. Assess, interpret and evaluate the outcomes of research, and develop ideas for the application of research outcomes.

5. Lead and collaborate with the research project team across multiple universities and industry partners on joint research challenges and integration to develop new tools and technologies.

6. Pursue and advocate responsible and open research and innovation to ensure ethical, fair and inclusive advances in science, technology and use of data.

7. Continually update knowledge and develop skills. To extend, transform and apply knowledge acquired from scholarship to research and appropriate external activities.

**N.B. The above list is not exhaustive.**

**Role Scope and Impact** This is a summary of the post holder's role in delivering outcomes, making decisions, and the complexity of problem-solving involved in the role.

1. The post holder will follow established guidance with freedom to make decisions within defined boundaries. Decisions outside these parameters will require approval from their manager or senior members of the AI4ME team.

2. The post holder will operate with clear procedures. The post holder is expected to contribute to improving existing procedures in collaboration with colleges and support in developing new processes where needed.

3. The post holder is expected to lead projects within the programme of work established by senior members of the team. In leading these projects, the post holder is expected to drive collaboration between project members and partners, be solution driven and own their work.

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**Supplementary Information**

- The post holder is expected to be available to participate in fieldwork as required by the specified research project.
- The post holder has no budgetary responsibility.
- The post holder will interact with a large cohort of students, academic staff and industry partners.

**Person Specification** This section describes the knowledge, experience & competence required by the post holder that is necessary for standard acceptable performance in carrying out this role.

| Qualifications and Professional Memberships | | |
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| The post holder must either hold a PhD or have equivalent professional experience in computer science, electronic engineering, or a related subject. A strong background in software development and experience in one or more of the following areas is essential: | | |

| 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). Level 1: basic level of understanding/experience and can apply it with guidance. Level 2: good level of understanding/experience and can apply it with little or no guidance. Level 3: expert level of understanding/experience and can apply, develop it and guide others. | Essential/ Desirable | Level 1-3 |
| --- | --- | --- |
| Experience in software development in topics such as computer vision, audio signal processing, machine learning, deep learning, and/or sensor systems. | E | 2 |
| Experience in collaboration and technology transfer to partners outside of academia. | D | 1 |
| Excellent writing and communication for varying levels of technical/non-technical audience. | D | 2 |
| Skills and experience of development using languages such as Python and C++ with relevant computer vision, signal processing, machine learning and/or deep learning tools (TensorFlow, PyTorch, Keras, OpenCV etc.). | E | 3 |
| A track record of publishing academic papers, open-source software tools and/or datasets. | D | 2 |
| **Core Competencies** This section contains the level of competency required to carry out this role.  (Please refer to the competency framework for clarification where needed). n/a (not applicable) should be placed, where the competency is not a requirement of the grade. | | Level 1-3 |

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| Communication | 3 |
| Adaptability and Flexibility | 3 |
| Customer, Client service and support | 2 |
| Planning and Organising | 2 |
| Continuous Improvement | 3 |
| Problem Solving and Decision Making Skills | 3 |
| Managing and Developing Performance | 1 |
| Creative and Analytical Thinking | 2 |
| Influencing, Persuasion and Negotiation Skills | 1 |
| Strategic Thinking and Leadership | 2 |

This Job Purpose outlines the core activities of the role. As the Department/Faculty and the post holder evolve, the duties and focus of the role may change. The University expects the post holder to adopt a flexible approach to work, including undertaking relevant training when necessary. If significant changes to the Job Purpose are required, the post holder will be consulted, and the changes will be reflected in a revised Job Purpose.

**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.

- Contribute towards broader university initiatives that have a positive impact on student experience, recruitment and campus operations. This may include participation in cross-functional activities such as open days, confirmation and clearing, welcome week, graduation.

- 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:**

- All staff have a statutory responsibility to take reasonable care of themselves and others and to prevent harm by their acts or omissions. All staff are, therefore, required to adhere to the University's Our Safety Policy Statement and associated Procedures.

**Organisational/Departmental Information & Key Relationships**

**Background Information**

This post is part of an **EPSRC Prosperity Partnership "Future Personalised Object-Based Media Experiences Delivered at Scale Anywhere",** led by Prof Adrian Hilton in the Centre for Vision, Speech and Signal Processing (CVSSP), University of Surrey, with the BBC and Lancaster University.

**The goal of the EPSRC Prosperity Partnership is to realise a transformation to future personalised content creation and delivery at scale for the public a home or on the move.**

Personalised media experiences have the potential to transform the way content is created and consumed.  Our research will address the key challenges for personalised content creation and delivery at scale using AI and Object-Based Media (OBM). The ambition is to enable media experiences which adapt to individual preferences, accessibility requirements, devices and location.  The partnership builds on the BBC's pioneering work in OBM and its ability to run large-scale trials with its audience and programme content. University of Surrey's expertise in audio-visual AI for machine understanding of captured content will allow efficient creation of personalised OBM experiences. Lancaster University's expertise in softwaredefined networking will develop adaptive systems for delivery of personalised experiences to millions of people whilst maintaining cost and energy efficiency (see further details below).

The postholder will be responsible for leading research and tool development in audio and audio-visual, computer vision and AI software to understand and transform video of real-world dynamic scenes to object-based representations allowing production and rendering of audio-visual content for personalised media experiences at scale. The postholder will design and develop novel algorithms and software to be used for production of personalised object-based media experiences.  The postholder will be based in CVSSP and work under the direction of Prof Adrian Hilton (Principal Investigator) and the Research Stream Leads (Co-Investigators).

**Centre for Vision Speech and Signal Processing (CVSSP) at the University of Surrey**

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. The Centre is internationally unique in bringing together expertise in both audio and visual machine perception, with the central goal of creating machines that can see and hear to understand the world around them. The Centre has state-of-the-art multi-camera UltraHD visual and spatial audio capture and analysis facilities supporting research in real-time audio-visual processing and visualisation. CVSSP has an AI compute facility with 240GPUs 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 AI@Surrey interdisciplinary network of over 300 research in AI and machine learning across the University of Surrey.

**Prosperity Partnership Summary: Future Personalised Media Experiences**

Personalisation of media experiences for the individual is vital for audience engagement of young and old, allowing more meaningful encounters tailored to their interest, making them part of the story, and increasing accessibility. The goal of the BBC Prosperity Partnership is to realise a transformation to future personalised content creation and delivery at scale for the public at home or on the move.

Evolution of mass-media audio-visual 'broadcast' content is moving to Internet delivery; this creates exciting potential for hyper-personalised media experiences delivered at scale to mass audiences. This radical new user-centred approach has the potential to disrupt the media landscape by directly engaging individuals at the centre of their experience, rather than predefining the content as with existing fixed 'onesize-fits-all' media formats (radio, TV, film). This will allow a new form of user-centred media experience which dynamically adapts to the individual, their location, the media content and producer storytelling intent, together with the user device and network compute resources available for rendering personalised content. The BBC Prosperity Partnership will position the BBC at the forefront of this 'Personalised Media' revolution enabling the creation and delivery of new services and positioning the UK creative industry to lead future personalised media creation and intelligent network distribution to render personalised experiences for everyone anywhere. Leading this advance beyond fixed media to personalisation is critical for the future of the BBC and the UK creative industry, opening new horizontal markets.

Realisation of personalised experiences at scale presents three fundamental research challenges: capture of object-based representations of the content to enable dynamic adaptation for personalisation at the point of rendering; production to create personalised experiences which enhance the perceived quality of experience for each user; and delivery at scale with intelligent utilisation of the available network, edge and

device resources for mass audiences. The BBC Prosperity Partnership will address the major technical and creative challenges to delivering user centred personalised audience experiences at scale. Advances in audio-visual AI for machine understanding of captured content will enable the automatic transformation of captured 2D video streams to an object-based media (OBM) representation. OBM will allow adaptation for efficient production, delivery and personalisation of the media experience whilst maintaining the perceived quality of the captured audio-visual content. To deliver personalised experiences to audiences of millions requires transformation of media processing and distribution architectures into a distributed low-latency computation platform for flexible deployment of OBM and compute intensive tasks across the network. This will achieve efficiency in terms of cost, time and energy use, while providing optimal quality of experience for the audience within the system constraints.

Personalisation is expected to be the primary driver for growth in the $2.3tn global media industry over the next decade. The UK media industry is worth over £100billion annually to the UK economy (6% GVA) and employs over 3.2million people. Personalised media has the potential to provide a significant boost to the UK's media industry and is projected to drive growth by £2billion/annum by 2030 with 100k additional jobs. This partnership aims to position the UK media industry as the global leader in delivering personalised media experiences to audiences across the globe.

**Example Use Cases** to drive research which will deliver business impact and demonstrate the potential of personalised media to renew the BBC mission of Public Service for ALL include:

**News/Documentary** - Individuals consume news according to personal interest, location, activity, device, language and time availability. Personalisation will dynamically adapt the content and rendering to the individual to intelligently prioritise information to their requirements. This will provide future news services tailored to the individual from a trusted source maintaining the integrity of the BBC whilst adapting to individual audience preferences. Mass-user trusted personalisation requires network services at scale to intelligently prioritise and render content for the individual.

**Drama** - User-centred personalisation of TV and radio drama aims to enhance the storytelling experience to engage the individual. Prioritisation based on the narrative importance of the audio and visual cues together with accessibility of the content (i.e. intelligibility of speech according to individual hearing requirements, spatial layout/contrast of visual cues for understanding the story). Requirements may change dynamically according to the individual, device, location, and activity. Dynamic rendering of OBM at scale will maximise individual engagement in the story.

**Education** - Intelligent personalisation of content tailored to individual understanding, interest, learning style and pace will support improved educational experiences in the classroom and at home. Collaboration with BBC Education will create and evaluate personalised interactive educational experiences using OBM to adapt according to individual learning requirements for each topic.

**Live Events (Sports and Music)** - Creating the sense of 'being there' at a live sports or music event is the ultimate goal of personalised immersive content production. The potential for future network media to transform a live event into objects and dynamically render personalised content for individual audience members is a key enabler for future immersive experiences of live events. OBM will enable user-centred rendering to maximise the sense of immersion. Achieving this at scale requires intelligent utilisation of network/device compute and transmission resources to transform the raw video to objects and dynamically adapt the rendering for individual users and their devices.

Other use cases of interest include: **Multiplayer interaction at live events**; and **Legacy content**

**Project partners**

BBC; Lancaster University; AudioScenic; BT; Charisma AI; Dimension Studios; Figment Productions; Foundry; Framestore; Imagination Technologies; Imagineer; Intel; Mirriad; NetworkMedia; SalsaSound; Sony; Synthesia; Telefonica.

**Department Structure Chart**



Executive Board

Management Board

Academics & Contributors

Researchers & Software Engineers

Senior AI Research Software Engineer

PhD Students