Abertay University

Candidate Brief

Virtual Production Research Engineer, CoSTAR Realtime Lab







Closing Date	12 p.m. (Noon) on Wednesday 16th December
Interview Date	Thursday 21st January 2027
Grade/Salary	Grade 7 (£39,560.18 - £46,969.76)
Hours	Full-time, 35 hours per week
Type of Contract	Fixed Term (for duration of project, currently end of March 2029)
Pension Schemes	Abertay University Pension Scheme (AUPS)
Annual Leave Entitlement	33 days pro rata, plus 8 plus closure days over the festive period, and 2 additional closure days pro rata which are determined by the University annually.
Recruiting Manager	Professor Gregor White
Recruiting Manager Contact	g.white@abertay.ac.uk
Area	CoSTAR, Faculty of Design, Informatics and Business
Location	CoSTAR Realtime Lab, Water's Edge, Dundee

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1. Abertay University

Abertay University is a modern, pioneering, and ambitious university with around 5,000 students. We have a strong and evolutionary tradition of preparing students for the industries and jobs of the modern world. Abertay has made its mark with high-quality, well-directed teaching and research which, in turn, provides a stimulating and enriching experience for our students.

Abertay University has achieved the Athena Swan Bronze Award, recognising the university's achievements in respect of gender equality. The university is also proud to hold the Race Equality Charter Mark Bronze Award for our ongoing commitment and active steps to improving race equality for our staff and students.

Visit our website for more information on:

- Working at Abertay
- Teaching and Learning
- Research

The City of Dundee

Dundee is a historic city set in a beautiful, sunny location on the east coast of Scotland. As well as being a compact city, Dundee has great schools and beautiful surrounding countryside. Just a little over an hour's drive away from Edinburgh, Glasgow and Aberdeen, Dundee's property prices can be half those of Scotland's larger cities.

Dundee is the UK's first UNESCO City of Design based on its contributions to medical research and the creative industries. From September 2018 Dundee became home to the second Victoria and Albert Museum, the V&A Museum of Design.

The Campus

The heart of the University lies in Bell Street, with most teaching and learning facilities, offices, research centres, and the Library all within just a few yards of each other.

You can find out more about the city and Abertay's campus by watching our Working at Abertay video.

Employment within Abertay

Abertay University recognises the value of a diverse working environment, and is keen to receive applications from individuals from across all of the equality protected characteristics (race, gender, disability, gender reassignment, age, sexual orientation, religion/belief, pregnancy/maternity, marriage/civil partnership).

The University also supports opportunities for part-time and flexible working and has policies in place to facilitate this. More information on our policies can be found at https://www.abertay.ac.uk/about/working-at-abertay/.

2. The Service and Area

About CoSTAR Realtime Lab

The CoSTAR Realtime Lab is located at Waters Edge in Dundee. The project brings together video games development expertise in Dundee's globally significant games cluster with world leading applied Research & Development (R&D) at Abertay University and Design Informatics in University of Edinburgh's world leading expertise in machine learning and artificial intelligence. The Realtime Lab delivers close-to-market innovation for digital productivity tools, creative production pipelines and content creation processes, focussed on driving value through innovation in the following areas.

- Performance and motion capture.
- Virtual humans and dynamic procedural performance.
- Machine Learning for production and Artificial Intelligence for process reproduction.
- Artificial intelligence for dynamic effects and procedural graphics for visual effects.
- Using advanced scanning technologies for 3D volume acquisition and ML/AI for procedural environment generation.
- Developing lighting and ray tracing standards to deliver environmental fidelity.
- Location based Software and hardware integration.
- Integrated virtual and real-world film and TV production.

The Realtime Lab is to operates a mixed reality R&D centre that supports sector engagement in collaborative R&D led innovation. Collaborative R&D will promote product innovation in SMEs by supporting new product, process and service development, driving value and stimulating diversification of product and markets. By combining world leading research with multinational technology companies and highly creative and dynamic SMEs, the Realtime Lab aims to transform the creative media industries in Scotland and the UK and deliver global leadership in next generation entertainment creation and technology innovators.

About the Faculty of Design, Informatics & Business

The Faculty of Design, Informatics & Business consists of four departments: Games Technology and Mathematics, Games and Arts, Cybersecurity and Dundee Business School. The Faculty is the home of Abertay's undergraduate and postgraduate degree programmes in games, digital arts, cybersecurity and applied computer science. Abertay was the first university to offer degrees in Computer Games and Ethical Hacking and continues to be recognised as an international leader in its fields. The Faculty is designated the National Centre of Excellence in Computer Games Education and has pioneered integrated cross-disciplinary practice-based learning through its ‘workplace simulation' approach to teaching and learning. Additionally, the University has recently been recognised as an Academic Centre of Excellence in Cyber Security Education by the National Cyber Security Centre.

3. The Role

Role Specific Duties and Responsibilities

As a CoSTAR R&D specialist you will be required to identify opportunities for innovation through collaborative research and development with industry and sector partners that will deliver improved performance, across production pipelines, increase accessibility to intelligent and automated systems while continuing to support the creative practice and quality of creative output in the UK media and entertainment sector. In doing so the appointee will undertake the following,

Cluster & Engine Operations: Configure and optimize Unreal Engine multi-node rendering using nDisplay and Switchboard across LED volumes.

Media Servers & Signal Flow: Manage media servers (e.g., Assimilate, Pixera), video routing (SDI, SMPTE 2110), genlock/timecode sync, and LED processors

Tracking & Calibration: Calibrate and align camera/performance capture systems (Mo-Sys, Vicon) and optical lens profiles with the virtual frustum.

Graphics & Procedural Development: Build custom stage tools, plugins, and shaders via C++, Python, and HLSL, utilizing procedural systems (PCG, Houdini).

On-Set Collaboration: Act as the lead technical problem solver on stage, coordinating smoothly with traditional departments (Camera, Grip, Electric, Art).

R&D: Integrate emerging workflows, including 3D Gaussian Splatting, neural rendering, Chaos Arena and AI tools. Development of hardware rendering specs for Virtual production as an ongoing research concern.

Utilise Cutting-Edge Tools and Software: Proficiently use industry-standard software and tools (e.g., Unreal Engine, Unity, Maya, 3ds Max, Substance Painter, etc.) to create, refine, and optimize dynamic environments. Stay updated with the latest software updates and features.

Documentation and Knowledge Sharing: Create detailed documentation, tutorials, and guides for fellow team members. Share insights, techniques, and best practices to foster a collaborative and knowledge-sharing environment.

Prototyping and Iteration: Rapidly prototype and iterate on environment designs, seeking feedback from stakeholders to refine and enhance the final result.

Quality Assurance and Testing: Conduct thorough testing and quality assurance to ensure environments function as intended across different scenarios and platforms. Address any bugs or issues that arise during testing.

Stay Compliant with Legal and Ethical Standards: Ensure that all creative work and processes comply with copyright, licensing, and other legal requirements. Uphold ethical standards in research and development practices.

Maintain Clear Communication: Communicate effectively with team members, providing updates on progress, challenges, and breakthroughs related to dynamic environments.

4. Person Specification		
Attributes	**Essential Selection Criteria**	**Desirable Selection Criteria**
Education/ Qualifications	**Postgraduate qualification** in a relevant subject area or equivalent industry experience in a relevant development role.	**PhD** (or be close to submission) or R&D experience in a relevant discipline, such as film and TV production, CGI, games, animation, VR, AR, XR, MR.
Knowledge and Experience	**Strong Practical Skills:** experience of building and maintaining intergrated hardware systems **Analytical Thinking:** Ability to critically evaluate data, identify trends, and draw meaningful conclusions. **Problem-Solving Skills:** Adept at identifying and addressing research challenges and finding innovative solutions. **Interdisciplinary Knowledge:** Comfortable working across multiple disciplines and integrating diverse perspectives into research projects. **Collaboration and Communication:** Ability to work effectively in a team, communicate research findings clearly, and engage with stakeholders. **Project Management:** Demonstrated experience in planning, executing, and managing research projects from conception to completion. **Technical Proficiency:** Familiarity with relevant research tools, software, and	**Unreal Engine & nDisplay**: Advanced mastery of cluster rendering, sync configurations, and stage optimization for Virtual Production. **Tracking Systems**: Hands-on experience with optical/mechanical tracking (Mo-Sys, Vicon). **Green-Screen and Realtime Comp**: Experience setting up and extracting performance from Greenscreen and Realtime Compositing in VP and broadcast Workflows. **Media Servers**: Strong working knowledge of playback systems and hybrid render pipelines. **Programming:** Experience in C++, Python, and real-time graphics/shading principles. **Procedural Content**: Practical knowledge of procedural generation frameworks and pipelines(UE PCG, Houdini). **On-Set Acumen:** Proven experience operating on a live

	methodologies applicable to the specific field. **Time Management:** Efficiently manage multiple tasks and deadlines without compromising the quality of work. **Ethical Conduct:** Adherence to high standards of research ethics and integrity in all stages of the research process.	virtual production volume with strong real-time troubleshooting skills. **Adaptability:** Proven capacity to thrive in fast-paced, ever-changing environments, and to pivot research focus as needed. **Innovative Thinking:** Capacity to generate novel research ideas and contribute to the advancement of the field. **Networking Skills:** Ability to build and maintain professional relationships within the academic and research community. **Flexibility:** Willingness to travel, if required, and adapt to different working environments or fieldwork conditions. **Mentoring and Supervision:** Experience in mentoring junior researchers or supervising research assistants.

5. Competencies

In order to achieve Abertay University's goals all employees need to demonstrate the following competencies:

To be completed by People Services

Effective Communication

Definition: The use of appropriate communications media and methods, to convey, explain or discuss information in a manner that is clear and accurate for the target audience.

Expected Level: The ability to use verbal and written material in a well structured, clear and concise manner. Take the initiative to keep others informed and ensure an appropriate method of information is adapted to meet the needs of the recipient to help their understanding of the topic.

Liaison and Networking

Definition: Active participation in, contribution to or leadership of internal/external networks which build positive relationships and promote collaborative working.

Expected Level: Exchanges information and ideas with others outside own teams as a means of keeping up to date. Involved in networks to benefit own area of work and promotes a positive image of the Institution and own team internally and externally.

Planning & Organising

Definition: Proactive planning, prioritisation and organisation of work activities and resources to ensure best value is achieved whilst maintaining service availability and quality standards.

Expected Level: The ability to agree and plan objectives and resource requirements for area of operation and monitor overall progress, ensuring corrective action is taken if required.

Initiative and Problem Solving

Definition: Showing desire for continuous improvement in individual and team performance by actively contributing to problem solving and responding positively to opportunities for development.

Expected Level: The ability to analyse problems to identify their causes and take action to prevent recurrence of problems. Consider possible solutions to identify those which offer wider benefits.

Teamworking and Motivation

Definition: Working with others in a co-operative and collaborative capacity to motivate and, where necessary, lead teams to achieve their objectives.

Expected Level: Exchanges information and ideas with others outside own teams as a means of keeping up to date. Involved in networks to benefit own area of work Promotes a positive image of the Institution and actively promotes the work and image of own team and the institution internally and externally.

Decision Making

Definition: Active contribution to/leadership of decision-making processes within the team which ensure objectives are achieved and quality standards are maintained.

Expected Level: Considers wide impact of decisions and assesses range of possible outcomes. Uses judgement to determine most appropriate and likely solution. Able to provide advice and guidance on complex issues to ensure that decisions are informed by relevant evidence.

6. Application Process

Making your application

Internal Applicant

When you are ready to start your application, you can apply via Employee Self-Service, there will be a link called 'Apply for a Job'. The application form will be populated automatically with the personal data currently held about you.

External Applicant

When you are ready to start your application, you will be prompted to register on our online recruitment system, which can be found at https://www.abertay.ac.uk/about/working-at-abertay/jobs

You will be guided through all of the stages of the application form. You will also be asked to upload your curriculum vitae. Within the online application form you will be asked to provide a supporting statement, this should be used to provide evidence that you meet all essential criteria within the person specification, including the essential competencies. Providing evidence is crucial as the essential criteria are mandatory requirements for the post. If you do not provide sufficient evidence for these requirements then we cannot guarantee that you will be short-listed for interview.

Interviews

It is anticipated that interviews for the post will be held on the date stated on the first page of this document or as soon as possible after the closing date. Applicants who are shortlisted for interview will be sent details of time and venue as soon as possible after the closing date.

If you have any queries regarding your application, please contact:
recruitment@abertay.ac.uk; +44 (0)1382 308961

Committed to Equal Opportunities

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