Job Description

Job title:	Research Associate in Interactive Virtual and Augmented Reality
Department/School:	Computer Science
Grade:	7
Reporting to	Professor Eamonn O'Neill
Location:	University of Bath premises

Job purpose

The Centre for the Analysis of Motion, Entertainment Research and Applications (CAMERA) is an exciting EPSRC funded large-scale research collaboration between the Department of Computer Science, the Department for Health and external partners at the University of Bath. CAMERA has over £10m of initial research commitment, including £4m from the Engineering and Physical Science Research Council (EPSRC), and an expectation for growth and long-term sustainability beyond the current 5-year funding. CAMERA aims to create impact in the areas of Entertainment, Human Performance Enhancement (e.g. Sport and Training) and Assistive Technologies (e.g. Health). A central theme is the application of technologies such as human motion capture to new areas including entertainment, sport, training and health. CAMERA has several existing world-class partners across Entertainment, Sport and Health, including: The Imaginarium, The Foundry, the Ministry of Defence, BMT and British Skeleton.

CAMERA has several research strands, supported by academic staff, post-doctoral research associates and PhD students. CAMERA has a world-class production standard motion-capture studio, including a range of full body and facial optical capture systems, inertial sensing and multi-camera 4K arrays, and virtual and augmented reality presentation technologies. In the area of virtual and augmented reality, we aim to research and develop innovative techniques and experiences in which people can interact with other people and things in virtual and augmented environments. Using advances in motion capture, 3D modelling and rendering, and human-computer interaction, we aim to make these experiences more controllable and, where appropriate, more realistic and natural.

The principal aim of this post, which is initially for 2 years, is to conduct research to enable these developments and to produce publications and other appropriate outputs to a world leading standard. In addition to these duties, the postholder will be expected to be involved in the supervision of PhD students and some teaching at undergraduate or postgraduate level. Commercial activities through CAMERA are also possible. The post holder is expected to work closely with all CAMERA staff and especially with researchers working on related areas of virtual reality, augmented reality and interaction.

Source and nature of management provided

Professor Eamonn O'Neill will provide the overall direction and line management for this post. Dr Yongliang Yang will also provide advice and assistance and serve as line manager in the absence of Professor O'Neill.

Staff management responsibility
None.

Special conditions
The post may require some limited work outside the normal working pattern such as early mornings, late evenings or weekends based on specific requirements of external partners. Some national and international travel can be expected.

Main duties and responsibilities	
The job duties and responsibilities listed below are intended to describe the general nature of the role. The duties and responsibilities, and the balance between the elements in the role, may change or vary over time depending on the specific needs at a specific point in time, or due to changing needs in research. Jobholders should note that there may not be an immediate requirement to carry out all the activities listed below.	
1	Research and develop new approaches to one or more of: virtual reality, augmented reality, human-computer interaction, 3D computer graphics and visual technologies.
2	Carry out research in line with CAMERA's objectives ensuring a commitment to the highest standards of ethics and integrity in research.
3	Produce working prototypes to demonstrate and evaluate new and existing technologies in appropriate areas.
4	Working with researchers within the wider CAMERA team to achieve project aims and disseminate research results.
5	Collaborate with and support other CAMERA staff and doctoral students working on related fields to the common benefit of the Centre, including the conduct of research and contributions to publishing results in high-quality peer-reviewed academic literature.
6	Document research and results including, but not limited to, the publication of papers in leading peer-reviewed conferences and journals, the development and maintenance of a code base and engagement in public dissemination of research outputs as appropriate.
7	Participate regularly in research group meetings and prepare and deliver presentations to the project team, internal and external collaborators and industrial partners.
8	Disseminate research at national and international conferences (via presentations and posters) and at other appropriate events such as workshops with partners.
9	Continually update knowledge and understanding in the field or specialism to inform research activity.
10	Engage effectively in non-academic impacts of research, including technology exchange, technology transfer and public engagement activities, possibly involving a range of partnerships with external organisations.
11	Identify further funding sources and other expansion possibilities relevant to CAMERA and provide assistance in securing these further resources, including preparing bids to funding bodies.
12	Work closely with existing and potential new external partners enabling the partners and the university to gain benefits from the work.
13	Assist with the supervision of postgraduate students and undergraduate project students and the assessment of student knowledge.
14	Provide assistance to the departmental teaching effort, for example by the supervision of practical sessions or occasional lecturing.
You will from time to time be required to undertake other duties of a similar nature as reasonably required by your line manager. You are required to follow all University policies and procedures at all times and take account of University guidance.	

Person Specification

Criteria	Essential	Desirable
Qualifications		
PhD in Computer Science or relevant discipline.	√	
Experience/Knowledge		
Excellent background knowledge of 3D computer graphics and/or human-computer interaction methods and techniques.	√	
Experience with the practical application of 3D computer graphics and/or HCI.	√	
Experience with the production of interactive software.	√	
Experience conducting user studies.		√
Experience of 3D data capture and modelling.		√
Evidence of published research in high quality peer reviewed journals and national and international conference presentations.		√
Significant depth and breadth of specialist knowledge to contribute to research programmes and to the development of departmental research activities.		√
Postdoctoral research experience.		√
Skills		
Excellent programming skills in languages such as C++, C#, CUDA, Python, OpenGL.	√	
Proven track record of producing clean, well documented and robust research code.	√	
Ability to design, implement and evaluate effective and innovative 3D user interfaces.	√	
Excellent development skills in environments such as Unity and Unreal Engine.		√
Excellent written and verbal communication skills including presentation skills.	√	
Excellent interpersonal skills, communication style and team working.	√	
Ability to prepare effective research proposals, to conduct research and to disseminate results.	√	
Ability to organise and prioritise workload.	√	
Excellent organisational and administrative skills with ability to work independently and on own initiative.	√	
Ability to form positive working relationships within the University,	√	

community, business and other partners.		
Ability to conduct controlled experimental evaluations, including rigorous data analysis and drawing appropriate inferences.		√
Ability to conduct qualitative and mixed methods research, including methods such as focus groups, surveys and questionnaires.		√
Ability to gain ethical approval for research involving human participants.		√
Attributes		
Commitment to excellence in research	√	
Commitment to working within professional and ethical codes of conduct.	√	
Motivated to perform research applications in the entertainment arena.	√	
Innovation in developing creative solutions.	√	
Ability to plan and deliver work to meet required deadlines.	√	
Enthusiasm and self-motivation.	√	
Tenacity – working to achieve own and team objectives and to overcome obstacles.	√	
Ability to work effectively individually and as an effective team member.	√	