

Position / Job Title:	Post-Doctoral Research Fellow - CfACTs PLUS (NLP-MMI) (Fixed-Term)
Ref:	FMC295/POSN105402
Location/Building:	Weymouth House, Talbot Campus
Faculty/Professional Service:	Faculty of Media and Communication
Group/Section:	National Centre for Computer Animation
Duration:	Fixed-Term until 1 January 2026
Normal Hours per Week: (Some flexibility will be required in order to ensure that key time scales and deadlines are met).	1 FTE
Grade:	6
Accountable to:	Professor in the Department of Computer Animation

Job Purpose

To manage and co-ordinate research project CfACTs PLUS cluster: “The Centre for Applied Creative Technologies PLUS – Transforming Healthcare and its Training with Digital Technologies” as directed by the Principal Investigator and academic supervisors. The project will carry out multi-disciplinary research to transform the UK/global healthcare sector and allied training using digital technologies derived from the creative industries sector. The role of the Post-Doctoral Research Fellow is to contribute to its delivery planning, designing and conducting research to produce published outputs.

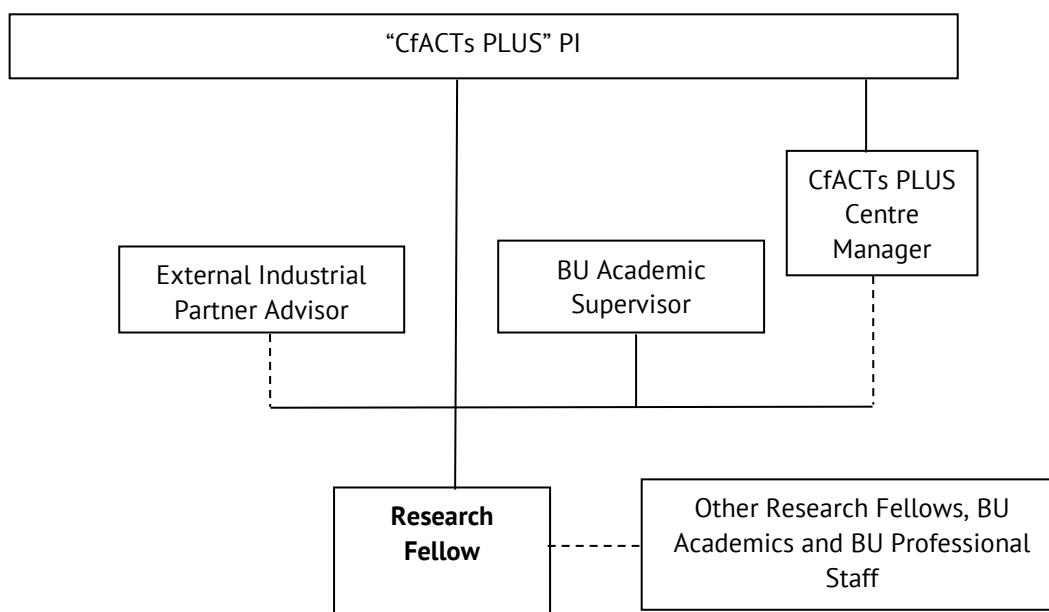
The fellow will deliver techniques and solutions related to “NLP-MMI: Marking Medical Image Report Automatically with Natural Language Processing”. The NLP-MMI will develop an automatic pipeline to evaluate the quality of a clinical report related to medical image provided by a trainee. Our primary focus will be to develop NLP tools for analysis to segment the content, identify the patterns, evaluate the accuracy of narratives base on word embeddings and analogy dataset. This will provide useful information for trainees to evaluate their skills and improve their learning over different anatomical regions and disease conditions. Related research experience in natural language processing, computer vision and machine learning are essential to carry out the proposed research works.

Main Responsibilities

1. Deliver research objectives of proposed work within the timeframes of the project and ensuring the achievement of project outcomes.
2. Plan, design and conduct research using modality fusion (extracting medical image labels), representation learning (encoding both text and medical image data) and modality translation (image-to-text/text-to-image) to identify the correspondence between image content and text, e.g. BERT can be used to encode the radiology reports.
3. Write up research work for publication, to include research outputs and reports.

4. Ensure maintenance of data and records in accordance with Bournemouth University's Research Data Policy, the General Data Protection Regulation (Regulation (EU) 2016/679) (GDPR), Data Protection Act 2018 and Freedom of Information.
5. Present findings at national/international conferences and other dissemination and knowledge exchange activities, including public engagement.
6. Identify opportunities and support on preparing proposals for research grant funding.
7. Continue to develop a body of published work and/or artefacts relevant to own discipline both in terms of type and volume.
8. Prepare documentation, for example, Research Ethical Governance, progress reports and associated paperwork including consent, participant information sheets, etc.
9. Ensure the development of best practice guidelines and the design and delivery of education and/or professional practice activities in computer animation and simulation.
10. Build relationships with internal and external contacts to exchange information, publish outputs, develop future collaborations and identify potential sources of research funding / opportunities to collaborate.
11. Contribute to the design and delivery of education activities in computer animation and medical simulation.
12. Supervise under/postgraduate students' projects, fieldwork, lab work, placements as appropriate.
13. Lead team meetings and committees as appropriate and provide support and guidance to other staff as appropriate.
14. Undertake personal and professional development activities in line with agreed appraisal and development programme to enhance personal knowledge and contribution to relevant activities. This may include gaining a Doctoral qualification if not already achieved.

Organisation Chart



Dimensions

Digital transformation is supporting the national healthcare system to work smarter and provide better care more efficiently with less staff and lower financial cost than ever before. The proposed cluster is designed to tackle state-of-the-art research challenges in applying such transformative technologies and deliver solutions to improve operational efficiency, enhanced training process for workforces and offer patient-centred approaches. The cluster has received funding support from Bournemouth University. It has been supported by AiSolve and University Hospital Dorset. It creates synergy with existing EU MSCA COFUND project (900025) – “CfACTs”, which has focused on digital creative technologies.

Contacts:

Internal: Research project team, technical and support staff within the university

External: AiSolve, University Hospital Dorset

Challenges

Although automatic medical image interpretation is on the horizon, the task is challenging in that it includes computer vision to extract visual representations and natural language processing (NLP) to explain medical image representations in simple English sentences. We envisage that related development in this project will provide better understanding of the NLP elements to offer a matrix to describe and enhance the quality of medical image reporting for improved healthcare.

Information Governance Responsibilities

Data User

- i. Comply with the associated data protection, information security, information management and information technology regulations, policies, processes and procedures.

Additional Information

The purpose of the job description is to indicate the general level of responsibility and location of the position. The duties may vary from time to time without changing their general character or level of responsibility.

BU is an equal opportunities employer which values a diverse workforce. The post holder must at all times carry out their responsibilities with due regard to the University’s Dignity, Diversity and Equality Policy Statement.

Our highly skilled and creative workforce is comprised of individuals drawn from a broad cross section of the globe, and who reflect a variety of backgrounds, talents, perspectives and experiences to build our global learning community. Through fused activity, the post holder must have an understanding of and commitment to promoting a global outlook.

All employees have an obligation to be aware of the University’s Sustainability Policy, Climate and Ecological Crisis Action Plan, Travel Plan and associated documents, and to ensure that they carry out their day-to-day activities in an environmentally responsible manner and inspire students to do the same.

November 2022



Person Specification

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Position No: FMC295/POSN105402	
Faculty / Service: Faculty of Media & Communication	Date: November 2022
SELECTION CRITERIA	Essential / Desirable
Knowledge (including experience & qualifications)	
Expertise in natural language processing– achieve a doctoral qualification (or close to completion)	E
Knowledge in natural language processing, computer vision, and machine learning	E
Experience of using Bert, GPT2/GPT3, Megatron	E
Experience of radiography, computer vision	D
Expertise in designing solutions based on machine learning algorithms	E
Experience of publishing research outputs	E
Experience of presenting research within and beyond academia	D
Experience in collaboration with researchers from other disciplines	D
Familiar with current developments in research and scholarship with ability to identify appropriate research options, methods and theoretical perspectives	E
Skills	
Ability to apply technologies related to computer vision and natural language processing to automate the annotation of medical images (both image to text and text to image)	E
Excellent communication skills, both orally and in writing, and the ability to communicate research findings to different audiences	E
Strong organisational skills	E
Strong writing abilities	E
Effective team working skills	E
Ability to reason accurately and quickly and handle complex situations	E
Attributes	
Analytical	E
Collegiate	E
Commitment to high quality research	E
Initiative	E
High level of attention to detail	E
Motivated to succeed	E