



Edge Hill
University

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GOOD
UNIVERSITY
GUIDE
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MODERN
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OF THE YEAR



Postdoctoral Research Fellow in Computer Vision and AI

Reference: EHR0129-0224
Salary: £38,205 - £42,978 per annum
Grade 8, Points 31 - 35
Contract Type: Fixed Term (12 months) from 01/04/2024 or soon thereafter
Hours: Full Time (37 hours per week)
Location: Ormskirk

Accountable to: Professor Amr Ahmed (Head of Department)
Reporting to: Professor Ardhendu Behera (Research Project Leader)





About the Role

You will work on an ESRC (Economic and Social Research Council) funded project, SCAnDi – single-cell and single molecule analysis for DNA identification. The project aims to use single-cell approaches to link cell-of-origin information with the DNA profile of the same cell, with the goal of identifying DNA profiles of specific individuals in cases where there are complex, mixed DNA profiles. In a forensic setting, and where cellular material is present, cell phenotype linked with single-cell analysis could be used to link DNA profiles with the tissue of origin (blood, sperm, or different epithelial cell types).

You will develop innovate computer vision and AI methods for cell phenotyping to automatically extract meaningful information about cellular characteristics from images. This will be used for cell type identification and cell selection from complex mixtures, focussing on intact and fragmented sperm cells and their density, presence of other cells as well as the estimation of age/degradation of sperm cells (e.g. percent tails intact, any other morphological features with high variability). Due to the interdisciplinary nature of the project, you will be working closely with involved researchers from the Earlham Institute, University of Edinburgh, University of Derby, Liverpool John Moore University, University of Portsmouth, and the James Hutton Institute.

About You

You will have a strong scientific interest, self-motivation and willingness to work as a team player within an interdisciplinary setup. You should have a PhD in the broad area of Computer Science/Engineering and/or Applied Mathematics with experience in computer vision, image processing, microscopic image analysis, deep learning, neural networks, artificial intelligence (AI) and strong computational skills. You must have working knowledge of computer vision and machine learning with strong programming (e.g., Python) and mathematical skills. You should have also experience in software development using agile, iterative and data-driven methodology. A good hands-on-experience with opensource deep learning tools (e.g., TensorFlow, PyTorch, etc.) is anticipated. Research/work experiences in fine-grained visual classification (FGVC) and/or whole slide imaging (WSI) are desirable. Publications in top machine learning and/or computer vision conferences/journals (e.g., CVPR, ICCV, ECCV, BMVC, AAAI, NeurIPS, ICML, ICLR, etc.) is highly desirable.





Specific duties and responsibilities

The post holder will be expected to:

- a) Engage positively in research activity in the broad area of computer vision, deep learning, neural networks, microscopic image analysis, artificial intelligence under the direction of the project lead/principal investigator.
- b) Complete high-quality research in the area of Computer Vision, AI and associated subject areas, leading on cell phenotyping, cell type identification and cell selection of the project and managing the work of others as required.
- c) Publish research outputs in leading peer-reviewed journals (e.g., IEEE TPAMI, IEEE TIP, IJCV, CVIU, etc.) and top-tier conferences (e.g., CVPR, ICCV, ECCV, NeurIPS, AAI, ICML, etc.) with an international audience, as lead author where appropriate.
- d) Effectively disseminate research findings at internal and external scientific meetings and conferences, making research accessible to lay and expert audiences.
- e) Engage with relevant academic and professional networks through active membership of societies, associations to enhance the reputation of the project and the University.
- f) Take an active role in the development of effective applications for research funding from both research councils and other external sources in collaboration with the project lead/principal investigator and others, taking a lead role in elements as appropriate.
- g) Work with the PI to identify opportunities for enterprise activity, knowledge exchange income and/or consultancy in this and related areas.
- h) Contribute to the delivery of teaching at undergraduate and taught postgraduate level as appropriate.
- i) Supervise third year undergraduate dissertation students and taught Masters within the area of research expertise.
- j) Assist in the development of the research skills of postgraduate students and early career researchers through workshops promoting highly specialised skills Computer Vision, Machine Learning, Microscopic Image Analysis, Deep Learning and AI.





- k) Ensure that their skills and technical competence are kept under review and enhanced where required to enable them to utilise specialist equipment and software used in the research projects.
- l) Contribute to relevant departmental and research group meetings and help to promote a dynamic research environment for colleagues, students and research users.
- m) Abide by the University's research governance framework in all aspects of research and work with the PI to ensure that all members of the team understand the importance of research integrity.
- n) Undertake additional duties, as required by the project lead/principal investigator or Head of Department.

In addition to the above all Edge Hill University staff are required to:

- a) Adhere to all Edge Hill's policies and procedures, including Equality and Diversity and Health and Safety
- b) Respect confidentiality: all confidential information should be kept in confidence and not released to unauthorised persons
- c) Undertake appropriate learning and development activities as required
- d) Participate in Edge Hill's Performance Review and Development Scheme
- e) Adhere to Edge Hill University's environmental policy and guidelines and undertake tasks in a sustainable manner
- f) Demonstrate excellent Customer Care in dealing with all customers





Eligibility

Candidates should note that shortlisting will be based on information provided on the application form with regard to the applicant's ability to meet the criteria outlined in the Person Specification attached.

Internal staff wishing to apply for a fixed term role as a secondment opportunity must discuss this with their existing line manager before applying.

It is important to note that this job description is a guide to the work you will be required to undertake. It may be changed from time to time to meet changing circumstances. It does not form part of your contract of employment.

It is expected that the post-holder will work flexibly according to the on-going demands of the job.

Contract Type: Academic Research

- Pension Scheme: This post is eligible for the Teachers' Pension Scheme
- Annual Leave: As an academic Researcher your annual leave entitlement is 35 days per annum.





Please note that applications will be assessed against the Person Specification using the following criteria, therefore, applicants should provide evidence of their ability to meet all criteria.

Methods of Assessment include Application Form (A), Supporting Statement (S), Interview (I), Test (T) & Presentation (P).

		Essential	Desirable	Method of assessment (A/S/I/T/P)
Qualifications				
1.	PhD in Computer Science/Engineering/Mathematics or related area	*		A
Experience and Knowledge				
2.	Detailed and highly specialised knowledge and understanding of Computer Vision, Deep learning, Machine learning and Artificial intelligence	*		A/S/I/P
3.	Previous experience of conducting high quality research involving Computer Vision, Machine Learning, Computational Intelligence and Deep learning	*		A/S/I/P
4.	Experience of publishing high quality academic peer reviewed articles as lead author	*		A/S
5.	Experience of working as a postdoctoral researcher in industry or the Higher Education sector		*	A
6.	Experience of working in multi-disciplinary research		*	A/S/I
7.	Knowledge and experience of the processes involved in preparing and submitting research funding proposals		*	S/I
8.	Experience of teaching undergraduates and postgraduates, including supervising research projects		*	S/I





		Essential	Desirable	Method of assessment (A/S/I/T/P)
Abilities and Skills				
9.	Able to communicate new and complex information effectively, both verbally and in writing, engaging the interest and enthusiasm of the target audience (both lay and expert)	*		S/I
10.	Able to present research results at department meetings and conferences	*		A/I/P
11.	Able to work on own initiative, organising and prioritising work effectively to meet deadlines	*		S/I
12.	A self-starter, able to work both independently, without supervision, and as part of a team taking a lead on work packages and managing the work of others	*		S/I
13.	Ability to operate flexibly and reliably, adapting to change as required	*		S/I
14.	Able to develop and maintain effective working relationships at all levels	*		S/I
15.	Able to work within ethical guidelines and maintain high levels of research integrity at all times.	*		S/I





How to Apply

When you are ready to start the formal application process, please visit our [Current Vacancies page](#) and click 'vacancies', search for the role you wish to apply for, and click 'Apply Online'. The online application form can be completed in stages and can be revisited at any time. The form automatically saves as you enter your information and it is simple to move backwards and forwards throughout at any time prior to submission. Help is available at each stage to guide you through the form. Before final submission, you can preview your application and can then choose to refine or submit the form.

Please refer to the advert for the closing date for this vacancy, all applications must be submitted by 11.59pm on this date. Following the closing date, we will contact you by email to let you know whether or not you have been shortlisted to participate in the next stage of the selection process. We try our best to inform all applicants within two working weeks following the closing date.

Application > Shortlisting > Interview > Outcome

For informal enquiries about this vacancy you may wish to contact: Professor Ardhendu Behera, Professor of Computer Vision and AI at beheraa@edgehill.ac.uk.

At Edge Hill University we value the benefits a rich and diverse workforce brings to our community and therefore welcome applications from all sections of society.

