Edge Hill University

Job Description and Person Specification

Summary

Job title:	Postdoctoral Research Fellow in Computer Vision and AI
Faculty:	Faculty of Arts and Sciences
Reference:	EHR0129-0224-R2
Grade and Salary:	£38,205 - £42,978 per annum. Grade 8, Points 31 to 35
Contract Type:	Fixed Term for 12 months
Hours:	Full Time (37 hours per week)
Location:	Ormskirk, Lancashire, L39 4QP
Accountable to:	Professor Amr Ahmed (Head of Department)
Reporting to:	Professor Ardhendu Behera (Research Project Leader)

disability confident EMPLOYER

MINDFUL EMPLOYER

DORA

Athena Swan Bronze Award

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.

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, AAAI, 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

g) Proactively consider accessibility and ensure appropriate quality assurance of templates, documents and published outputs using software such as Microsoft Accessibility checker and Blackboard Ally

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 the successful applicant will be required to undertake an enhanced disclosure for you from the Disclosure and Barring Service and that this will form part of the conditions of offer of employment.

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

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.

Person Specification

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. Where a supporting statement is indicated you will be asked to provide a statement of how you meet this criterion within the application form.

Qualifications

Criteria	Essential or Desirable Criteria	Method of Assessment
PhD in Computer Science/Engineering/Mathematics or related area	Essential	Application

Experience and Knowledge

Criteria	Essential or Desirable Criteria	Method of Assessment
In-depth knowledge in Computer Vision, Deep Learning, Machine Learning, and AI, evidenced by quality publications and presentations at reputable conferences	Essential	Application, Supporting Statement, Interview, Presentation
Proven track record of high-quality research in Computer Vision, Machine Learning, Computational Intelligence, and Deep Learning, demonstrated through successful projects, publications, and conference presentations	Essential	Application, Supporting Statement, Interview, Presentation
Experience of publishing high quality academic peer reviewed articles as lead author	Essential	Application, Supporting Statement
Experience of working as a postdoctoral researcher in industry or the Higher Education sector	Desirable	Application
Experience of working in multi-disciplinary research	Desirable	Application, Supporting Statement, Interview
Knowledge and experience of the processes involved in preparing and submitting research funding proposals	Desirable	Supporting Statement, Interview
Experience of teaching undergraduates and postgraduates, including supervising research projects	Desirable	Supporting Statement, Interview

Abilities and Skills

Criteria	Essential or Desirable Criteria	Method of Assessment
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)	Essential	Supporting Statement, Interview
Able to present research results at department meetings and conferences	Essential	Application, Interview, Presentation
Able to work on own initiative, organising and prioritising work effectively to meet deadlines	Essential	Supporting Statement, Interview
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	Essential	Supporting Statement, Interview
Ability to operate flexibly and reliably, adapting to change as required	Essential	Supporting Statement, Interview
Able to develop and maintain effective working relationships at all levels	Essential	Supporting Statement, Interview
Able to work within ethical guidelines and maintain high levels of research integrity at all times	Essential	Supporting Statement, Interview

Candidate Guidance and How to Apply

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.

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.

When you are ready to start the formal application process, please visit our Current Vacancies website, search for the role you wish to apply for, and select the 'Apply Online' button at the bottom of the job advert. 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 you can move backwards and forwards between individual form sections at any time prior to application 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.

As part of your application, you will be asked to provide details of two referees. Please see our application form for guidance on how to nominate your referees.

Please refer to the advert for the closing date for this vacancy, all applications must be submitted by 11:59pm on this date. Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. Please check your spam/junk mail if you do not receive this email.

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.

If you are offered the post, the offer will be subject to pre-employment clearance. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity and evidence of your qualifications and professional memberships as referenced as essential or desirable in the person specification for this role. You will also be asked to complete onboarding forms including a pre-employment health questionnaire to support the University make appropriate adjustments to support you in the role. The University will also contact the referees you have nominated. Please note that you may be asked for alternative or additional referees as we seek references that cover your previous three years of employment history. Following successful completion of pre-employment clearances (including an Enhanced Disclosure and Barring Service check, as relevant, please see job advert) a start date will then be arranged with you.