Edge Hill University

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.

Job description for the post of:

Research Assistant
EHA1924-0720

The post-holder will be:

Accountable to: Prof Nik Bessis, Head of Department of Computer Science

Reporting to: Dr Huaizhong Zhang, Senior Lecturer

The Post

You will be working on an EHU funded Project titled “Exploration and Enhancement of Land Management Strategies Using Hyperspectral Imagery and Big Data Analytics”. The project aims to deal with the challenges of land classification and land use management in Nigeria, supported by the GCRF Development Fund. This interdisciplinary research brings together expertise in Computer Vision, Machine Learning, Deep Learning and Geographical Information across Computer Science and Geography in both UK and Nigeria. You will provide quality research support to enthusiastic team(s) of academics leading research projects.

You will work closely with Dr Huaizhong (Sam) Zhang and Dr Marcello Trovati in Edge Hill University, and Dr Ce Zhang in Lancaster University, while providing support to carry out necessary research activities in this project. The project aims to monitor and model the environmental change by classifying land-cover and land-use features using the state-of-the-art deep learning techniques, whilst identifying trends and predictive capabilities as well as actionable insights. Specific satellite sensor images will be acquired to provide spectral and spatial information and enhance data analytic capacity. Advanced techniques in deep learning and their extensions will be applied to exploit deep spectral-spatial features and deliver land cover and land use classification outcomes. The project development will not only offer a land-cover and land-use classification system, but also advance our understanding of the relationship between ground features and development/management issues in the developing countries (e.g. Nigeria).

You should have a strong scientific interest, self-motivation and willingness to work as a team player within an interdisciplinary setup. You will support in designing and developing novel reinforcement learning algorithms with inputs from the involved

researchers. You will have strong programming skills (e.g. Python, C/C++, Java, Matlab) with exposure to computer vision, machine learning and deep learning. The knowledge of deep learning and hands-on-experience with one or more deep learning tools (e.g. TensorFlow, Keras, PyTorch, Theano, Caffe, Scikit-Learn etc.) is desirable. Some remote sensing and GIS background would be desirable such as past experience in using software such as ArcGIS, QGIS, ENVI/IDL, and the knowledge of satellite sensor imagery (e.g. NASA/Hyperion, ESA Sentinel-2/PlanetScope etc.). You should also demonstrate appropriate technical, organisational, communicative, and creative skills to be effective in this project and you are expected to have knowledge of agile, iterative and data-driven methodology for developing software solutions.

Specific duties and responsibilities

The post holder will be expected to:

a) Data collection: assist research team with data collection employing the following methods.

   A variety of datasets will be collected with different formats. We will make use of various open source software/tools to annotate the acquired data for training the designed DL models. The candidate is expected to spend some time in learning these tools and being familiar with the training procedure. Any prior experience with these tools/training environments will be preferred.

b) Data processing and analysis

   Once the data is generated, we will apply and develop various deep learning algorithms to solve the land cover/land use problems. Some developed sophisticated platforms are provided to enhance and extend specifically for this study. Your novel thoughts and critical thinking will be pivotal to successfully develop and implement the system.

c) Presentation of results.

   Contribute to the presentation of results of research to internal groups/PI. Draft reports through appropriate word processing and data presentation software. Providing support towards high-quality publications targeting top-tier computer vision/GIS conferences (e.g. CVPR, ICPR, ECCV, ICML, BMVC, ICIP etc.) and journals (e.g. TGRS, RSE, ISPRS, TIP, PR.).

d) Literature searches.

   To undertake scoping surveys of bibliographic databases and literature search engines informed by up to date information on related research. Develop an understanding of a range of literature and gaps in literature.

e) Project administration.

   Some administration of projects under the supervision of the line manager, with responsibility for own areas of the project. Seek guidance when appropriate from PI.

f) Attending and contributing to research team meetings.

g) Being an active member of Department Research Committee and/or working groups associated with particular research projects within the Faculty.

h) Initiating and, where appropriate, lead internal networks to facilitate collaborative decision-making

i) Adherence to the University's research governance framework

j) Contributing to the production of bids for research funding.

k) Provision of support for consultancy, research and evaluation activities.

l) To make a positive contribution to the work of the Faculty/Department.

In addition to the above all Edge Hill 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 training and development 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 internal and external stakeholders.

Contract Type:	Support
Salary:	Grade 5, points 19 - 22 £24,461 - £26,715 per annum
Hours:	36 1/4 hours per week
Pension:	Local Government Pension Scheme
Annual Leave:	23 days per annum

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

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

Edge Hill University

PERSON SPECIFICATION

Research Assistant
EHA1924-0720

CRITERIA: Applicants should provide evidence of their ability to meet the following criteria:

		Essential	Desirable	*Method of Assessment
Qualifications				
1	Qualified to degree standard in relevant subject area	*		A
2	Postgraduate qualification		*	A
Experience and Knowledge				
3	Experience of carrying out comprehensive literature reviews	*		S, I
4	Experience of development of research design and data collection using identified methods	*		S, I
5	Experience of high-quality report writing	*		S
6	Experience of working in the Higher Education sector		*	A
7	Experienced in the use of appropriate software for data analysis	*		A, I, P
8	Strong programming skills (e.g. Python, Sci-kit, Linux) and exposure to computer vision, machine learning and deep learning	*		S,I
9	Experience with deep learning tools (e.g. TensorFlow, Keras, PyTorch, Theano, Caffe, Scikit-Learn etc)		*	S,I

		Essential	Desirable	*Method of Assessment
10	Demonstrate high level skills in in the use of Microsoft Office, particularly Excel, Word and the production of databases	*		S, T, P
Abilities/Skills				
11	Able to work on own initiative, independently as well as part of a team	*		S, I
12	Able to organise and prioritise work effectively demonstrating flexibility and reliability to meet required deadlines	*		S, I
13	Able to work with integrity and manage effectively research data	*		S, I
14	Excellent communication skills both oral and written	*		S, I, P

***Method of Assessment**
(I-Interview, A-Application, S-Supporting Statement, T-Test, P-Presentation)
Please note that applications will be assessed against the Person Specification using this criteria.