Research Associate in Algorithm Development and Data Science

Recruitment Pack

Summary

JOB TITLE: Research Associate in Data Science

SECTION: Environmental Research Institute (ERI), UHI North, West and Hebrides

SCALE POINT RANGE: Research Associate I (£36,066 - £38,641) or Research Associate II (£41,467 - £44,420)

TERM: 36-month appointment (subject to probationary period) with the possibility to extend or transition to an open-ended position, subject to funding.

START DATE: Negotiable, available 1 July 2025 onwards (subject to receipt of satisfactory references and securing PVG Scheme membership via Disclosure Scotland).

PENSION: Local Government Superannuation Scheme

ANNUAL LEAVE: 31 days + 14 days public holidays

RESPONSIBLE TO: Dr Benjamin Williamson

CLOSING DATE: 16 May 2025

INTERVIEWS: 26 May 2025 onwards (initial interviews may be online)

The Environmental Research Institute (ERI) is part of UHI North, West and Hebrides, one of the academic partners of UHI. Our mission is to 'provide dynamic leadership in research, innovation and education that advances understanding and informs management of our natural environment'.

Located in Thurso, on the north coast of Scotland, the ERI is close to many outstanding marine energy resources with excellent proximity to marine energy sites for research and innovation opportunities. Sustainable use of these wind, wave and tidal stream resources is key to achieving ambitious Scottish and international renewable energy targets.

The ERI's 'Energy' research team comprises students and researchers, working across engineering, ecology, oceanography, marine sensing and robotics, and collaborating with an array of regional, national and international partners.

We are now seeking to recruit a Research Associate to join our multi-disciplinary team. The researcher will benefit from the purpose-built 'Centre for Energy and the Environment', comprising modern offices, instrumentation and electronics laboratories, workshops, and access to the Pentland Firth via ERI's research boat 'Aurora'.

Research Associate in Algorithm Development and Data Science

Harness Big Data to Understand Our Oceans

This role focuses on developing novel data processing techniques to automate detection, classification, and sensor fusion for monitoring offshore renewable energy. Large datasets collected across active and passive acoustics, sometimes supported by camera imagery, require development of robust and reliable algorithms to automate filtering, target detection, tracking and classification. Evaluation of algorithm performance across environmental conditions is needed to quantify uncertainty and allow confidence in decision making. Sensor fusion can also be used to mitigate the limitations of different instruments, or to allow combination of detection e.g., vocalising cetaceans from passive acoustics with concurrent measures of prey using active acoustics.

As new sensors and technologies are developed, e.g., broadband active acoustics or multi-frequency imaging sonar, a robust evaluation of instrument performance in controlled conditions is also required.

With the vast amounts of data collected through these various sensors, machine learning and advanced algorithms can unlock new ecological insights.


The candidate will:
  + Lead development of algorithms for data processing and analysis, with a focus on imaging sonar data, and future directions including multifrequency echosounder and broadband passive acoustic data, supporting translation of large datasets into ecological analyses.
  + Explore and demonstrate opportunities for sensor fusion.
  + Design structured trials to evaluate and characterise the performance of new sensors.
  + Support software interfaces for parsing and processing data streams in real time (e.g., Ethernet and other communication standards, proprietary file formats, common databases, edge computing).
  + Develop machine learning approaches for feature extraction, classification, and tracking of marine organisms and environmental variables.
  + Explore opportunities to contribute to wider data processing ranging from radar remote sensing, to aerial drone measurements of surface currents and marine plastic litter.

Person specification

The candidate will require:

+ Excellent analytical, programming (MATLAB/Python, R), or data science / computer science experience, with experience managing and processing large datasets.

+ Statistical skills (e.g., linear and non-linear regression, modelling and classification techniques, clustering, dimensionality reduction, k-NN etc.).

+ Experience developing and optimising algorithms for remote sensing (sonar, radar, etc.) is an advantage, particularly in the context of processing large datasets.

+ Interest in machine learning / deep learning, and applicability to marine sensing.

+ Passion for transforming complex datasets into actionable ecological insights.
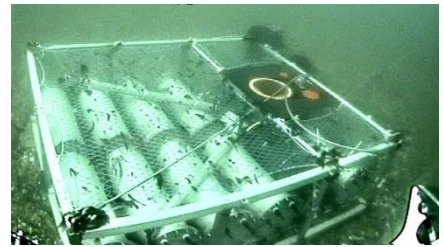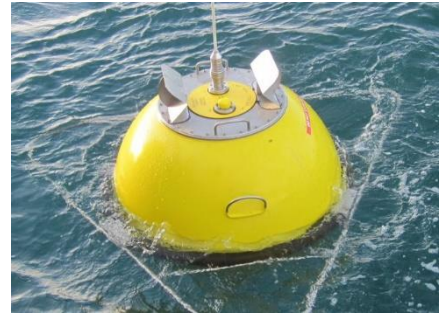
Desirable:

+ Experience of academic teaching
+ Experience of instigating new collaborations or developing partnerships
+ Experience working on or managing collaborative, multi-institutional projects
+ A relevant professional qualification or membership
+ An ability to think creatively, and to advance innovative ideas
+ Experience of commercial or consultancy practice
+ Experience of presenting to stakeholders

Qualifications:

Postholders have the knowledge, skills and experience normally associated with a first degree, together with:
+ a PhD or an equivalent professional qualification; or
+ at least 4 years appropriate professional experience.

Experience:

+ Sufficient breadth or depth of specialist knowledge in the discipline to effectively contribute to research programmes and to the development of departmental research activities.
+ A developing ability to prepare research proposals, to conduct individual research work and to disseminate results, with the assistance of a mentor if required.
+ The ability to organise own research workload, with some guidance from senior colleagues if required.

Job Description

The following duties and responsibilities are intended to give a broad indication of the variety of tasks the post holder may be asked to undertake.

RESEARCH
+ Develop research objectives and proposals for own or joint research, with the assistance of a mentor if required.
+ Conduct individual and/or collaborative research projects.
+ Identify sources of funding and contribute to the securing of funds for research.
+ Continually update knowledge and understanding in field or specialism to inform research activity.
+ Disseminate knowledge of research advances to inform departmental teaching effort.

TEACHING AND LEARNING
+ Be involved in the assessment of student knowledge and supervision of projects.
+ Support the work of students, providing advice on study skills and helping them with learning.
+ Contribute to teaching via, for example, practical work, and running tutorials.

COMMUNICATION
+ Deal with complex information of a specialist or highly technical nature.
+ Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
+ Join external networks to share information and ideas and identify sources of funding.
+ Liaise with colleagues and students and external research sponsors (if any) as deemed necessary by research supervisor.
+ Disseminate research results as appropriate to the discipline e.g. by presentations at conferences and the write up of research results for peer reviewed publication.
+ Prepare proposals and applications to external bodies, e.g. for funding purposes.

PLANNING AND MANAGING
+ Manage own research and administrative activities, with guidance if required.
+ Plan and manage own tutorials/research activities as agreed with mentor/in collaboration with others.
+ Use facilities/research resources and laboratories as appropriate.

TEAMWORK
+ Attend and contribute to relevant meetings.
+ Collaborate with academic colleagues on areas of shared research interest, including research methodology, results etc.

INITIATIVE, PROBLEM-SOLVING & DECISION-MAKING
+ Develop initiative, creativity and judgement in applying appropriate approaches to identify areas for research, develop new research methods and extend the research portfolio.
+ Contribute to collaborative decision making with colleagues on academic content in areas of research.
+ Use new research techniques and methods.
+ Use creativity to analyse and interpret research data and draw conclusions on the outcomes.

GENERAL
+ Proactively contributing to own personal development and supporting the wider sustainability of UHI North, West and Hebrides;
+ Contribute to UHI's climate, biodiversity, and sustainability goals, including net-zero by 2040;
+ Ensuring consistency and equality at all times;
+ Ensuring compliance with data protection requirements and all college policies as required, including appropriate responsibility to ensure the health and safety of self and others;
+ Working collaboratively with colleagues to ensure a whole college focus and approach

Key Terms of Employment

Hours of Work	A full-time working week is 35 hours. This may include evening and weekend work, where required.
Holidays	A full year's holiday entitlement is 31 days. In addition, there are 14 days public holidays of which 10 are taken at Christmas and 2 at Easter, the remaining 2 are treated as floating.
Salary	Research Associate I (£36,066 - £38,641) or Research Associate II (£41,467 - £44,420)
Location	The position is planned to be based at the ERI in Thurso although you may be required to work from other sites as appropriate to the duties. There may be the possibility of flexible remote-working arrangements – please indicate this in your application if it is of interest.
Pension	You will be contractually enrolled into the Local Government Superannuation Scheme. Further details are available on joining.
References / PVG Scheme	For external candidates, appointment will be subject to references and admission to the PVG Scheme.

Further information

The following websites may be useful in providing further information.

- **+** **The University of the Highlands and Islands:** http://www.uhi.ac.uk/
- **+** **UHI North, West and Hebrides:** http://www.nwh.uhi.ac.uk/en/
- **+** **The Environmental Research Institute (ERI):** http://www.eri.ac.uk/

For further information on this position, please contact Dr Benjamin Williamson, leader of ERI's 'Energy' research group: benjamin.williamson@uhi.ac.uk

Completing the Application Form

Please read the application form thoroughly and complete it electronically (preferred) or in black ink. Please ensure that you complete all sections. Where answers require additional detail, this should be provided on a continuation sheet and attached to the form.

A current CV and covering letter should also be provided in addition to the application form.

The information that you provide in your application form & other supporting information is the only information we will use in deciding whether or not you will be short listed for interview. Your application will be treated in the strictest confidence.

References

Please give the name, address, telephone number and email address (if known) of two referees, including your existing or last employer, to whom reference may be made in support of your application concerning your professional ability and performance at work. References will only be taken up for short-listed candidates. Please note that any offer of employment will be conditional upon receipt of satisfactory references from your current/last employer or academic institution, unless advised otherwise.
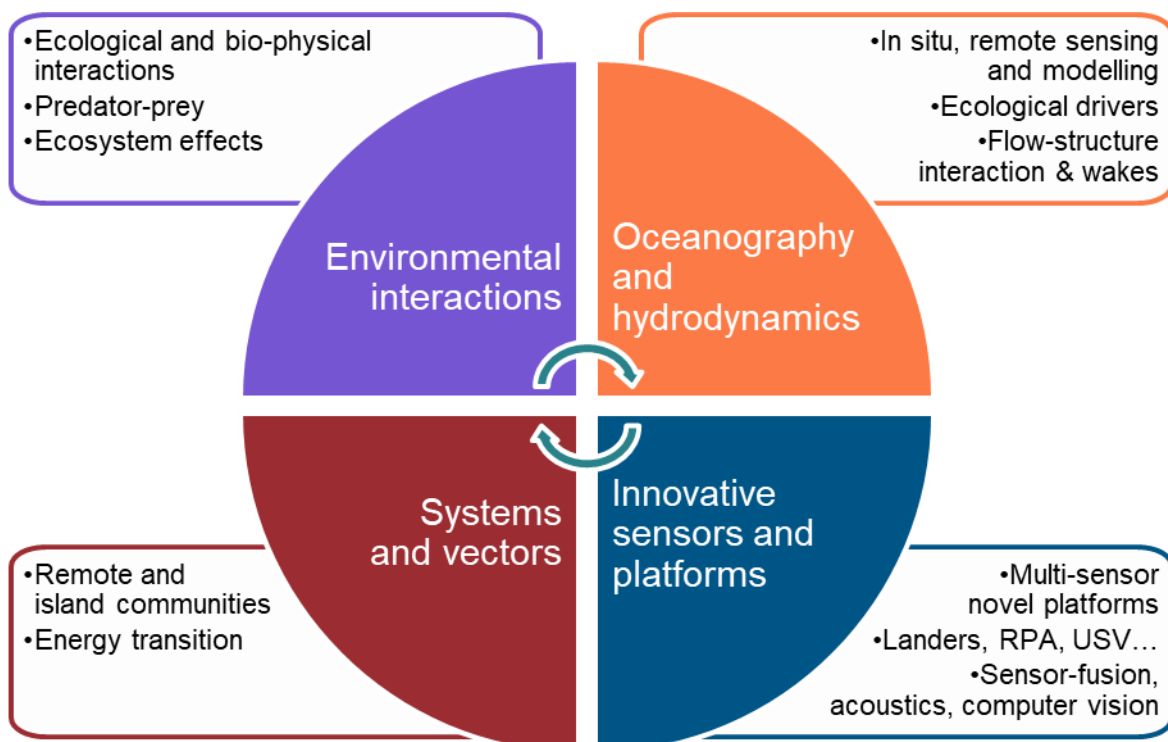
Submitting your application

Completed applications must be returned by the closing date indicated Applications (preferably by e-mail) should be sent to hr.nwh@uhi.ac.uk

Or: Human Resources, UHI North, West and Hebrides, Ormlie Road, Thurso, Caithness, Scotland KW14 7EE. We will acknowledge receipt of completed applications by e-mail. Written acknowledgement of completed applications will only be provided where requested and where a stamped addressed envelope is enclosed with your application for this purpose. We will contact you concerning your application once shortlisting has been completed.

Energy research at ERI

The promise of renewable energy is huge, from reaching emissions targets to contributing to blue growth. Along with this promise comes the pressing need to understand how energy harnessed from wind, waves and tides will impact the environment. Sustainable use of these resources will play a key role in achieving the Scottish Government's ambitious renewable energy and carbon emission targets.

Our philosophy of "research where the resource is" means ERI is ideally situated, yet our research has international reach and impact. We actively seek and develop effective collaborations and partnerships, within regional, national and international settings. Our team integrates in-situ measurement, environmental survey, experimental, modelling and remote-sensing approaches. These provide new insights relevant to renewable energy, but also ecosystem functioning and anthropogenic impacts more generally within the fields of marine biology, behavioural ecology and oceanography.

Environmental interactions
- Ecological and bio-physical interactions
- Predator-prey
- Ecosystem effects

Oceanography and hydrodynamics
- In situ, remote sensing and modelling
- Ecological drivers
- Flow-structure interaction & wakes

Systems and vectors
- Remote and island communities
- Energy transition

Innovative sensors and platforms
- Multi-sensor novel platforms
- Landers, RPA, USV…
- Sensor-fusion, acoustics, computer vision

About the area

The North Highlands is home to Scotland's most famous drive - the North Coast 500, and to one of our most famous destinations - John O'Groats. The landscape is breath-taking, featuring iconic mountains and flat rolling moorlands. High tech companies sit side-by-side with vibrant, innovative SMEs. At the centre of offshore wind, wave and tidal stream renewable energy developments, the area also hosts Rolls Royce, Subsea 7 and BT among the global companies investing in employment in the far north of Scotland.

The area is a draw for outdoor sports enthusiasts and hosts the internationally recognised surf spot around the Thurso East reef. With beautiful beaches and bays, wildlife, high hills and big skies, the region of Caithness and Sutherland has much to offer.

Thurso (population c. 8000) has origins dating back to Viking times when it was an important Norse settlement (its name comes from the Norse *Thorsa* meaning *Thor's River*). Thurso later grew to become a market town and was noted for its trade with Scandinavian and Baltic ports from as early as the 14th century. Situated on the Pentland Firth in the beautiful, sheltered Thurso Bay it is the most northerly town on the Scottish mainland. Thurso has a fine harbour, beach and looks out over the Firth to the Islands. Just west of Thurso lies Scrabster, the main ferry port for Orkney.

For a town of its size, Thurso has numerous amenities including:
+ A vibrant local shopping centre, three primary schools and one secondary school
+ Several hotels, lively bars and restaurants, leisure facilities including gyms, a swimming pool, tennis & squash courts, yoga studio, and a cinema
+ Clubs and societies including dancing, drama, walking, kayaking, surfing, sailing, music, community greenhouse, etc.
+ Railway, bus, ferry connections and Wick airport within 30 minutes

https://www.hie.co.uk/our-region/our-areas/caithness-and-sutherland/
https://www.venture-north.co.uk/things-to-do
https://www.venture-north.co.uk/guides/thurso-north-coast

Click these links to view these videos on YouTube:
Summer in Caithness & Sutherland
Venture North to Caithness & Sutherland

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