Aston University
BIRMINGHAM UK

Research Fellow

Reference: 0647-25

Grade: 8

Salary: £38,784 to £50,253, per annum, depending on experience

Contract Type: Fixed Term (Up until 31 July 2027)

Basis: Full Time

Job description

Job Purpose:

We are seeking a highly motivated Research Fellow to join the Aston Institute of Photonic Technologies (AiPT), one of the world's leading photonics research centres. This role is part of a HORIZON-EU-funded project (Engineered Combined Sensing and Telecommunications Architectures for Tectonic and Infrastructure Characterisation - https://ecstatic-project.eu/) aimed at pushing the boundaries of fibre-optic sensing in the existing communications network and leveraging AI-driven solutions for real-time event detection and infrastructure monitoring. The successful candidate will be at the forefront of integrating advanced optical technologies with machine learning techniques to develop novel, high-performance fibre-optic sensing applications.

You will be responsible for developing AI-based algorithms for event detection and classification, combining state-of-the-art machine learning models with real-world data from diverse environments such as submarine and terrestrial cables. You will also contribute to cutting-edge research in data fusion techniques by integrating various sensing modalities - involving, for example, state of polarisation (SOP) monitoring and distributed acoustic sensing (DAS) - to improve accuracy and performance in real-time decision-making systems.

Main Duties/Responsibilities:

Research

- **Contribute to the development of algorithms for detection and classification of events using ML**

Develop and train machine learning algorithms for detecting and classifying events (e.g., geophysical events, intrusion detection) based on fibre-optic sensor data. This includes the use of CNN, RNN, transformers, and advanced data compression techniques to down-sample signals while preserving relevant information.

- **Contribute to the development of an AI platform for event detection and classification**

Develop and implement a data fusion and decision-making system that combines data from different interrogators, such as SOP and DAS, to enhance event classification accuracy. Work towards demonstrating this system in real-time field trials.

- **Contribute to the development of Specifications for demonstration systems**.

Contribute to the development of demonstration system specifications integrating the developed signal processing algorithms with sensing technology, including identification of key performance indicators (KPIs) such as strain sensitivity, response times, and event-detection accuracy.

- **Contribute to the development of the Testing protocol**

Generate testing protocols for the final demonstration systems, including reviewing and revising starting specifications based on the achieved results.

Supervision and Collaboration

- Assist in the supervision of PhD students and junior researchers working on tasks directly related to the specified work packages.
- Collaborate with the 13 academic and industrial partners across Europe to ensure the integration of technology and algorithms in system demonstrations.

External Engagement

- Present research outcomes at national and international conferences.
- Disseminate project activities to the general public.

Project Management

- Contribute to regular project meetings, providing updates on task progress and ensuring that research activities align with the overall project objectives.

Additional responsibilities

- Engage in continuous personal and professional development in line with the demands of the role, including undertaking relevant training and development activities to develop themselves and support the development of others.
- Ensure and promote the personal health, safety and wellbeing of staff and students.
- Carry out duties in a way which promotes fairness in all matters and which engenders trust.
- Promote equality of opportunity and support diversity and inclusion as well as working to support the University's environmental sustainability agenda and practices.

Person specification

	Essential	Method of assessment
Education and qualifications	A PhD (or equivalent expertise) in data analytics, photonics, optical communications, fibre optics, or a closely related field.	Application form
Experience	Experience of publishing research in high impact, high qualty publications. Experience of presenting at national and international conferences/ seminars etc. Strong programming skills in MATLAB and Python, with a focus on implementing machine learning algorithms for data analysis.	Application form and interview
Aptitude and skills	Ability to present data in both a clear and concise manner that is visually appealing. Ability to prepare written communications to a high standard. Strong analytical and problem-solving skills, particularly in the context of fibre-optic sensing and machine learning. Ability to work independently and as part of a collaborative team, leading research activities and contributing to project management. A willingness to undertake further training as appropriate and to adopt new procedures as and when required.	Application form and interview

	Desirable	Method of assessment
Experience	Expertise in multimodal sensing and data fusion techniques. Experience working with real-time, low-latency systems, such as FPGA-based solutions for signal processing.	Application form and interview

	Desirable	Method of assessment
	Prior experience in managing laboratory testing protocols and collaborating with industry partners. Experience of positive collaboration within and outside of candidate's immediate research team.	

University values

All staff are expected to demonstrate/promote the University's values and expectations, which are an integral part of our strategy and underpin the culture of the University. In addition, our leaders are expected to be accountable, help to execute strategic visions of the University and share and set clear expectations that inspire those around them.

How to apply

You can apply for this role online via our website https://www2.aston.ac.uk/staff-public/hr/jobs.

Applications should be submitted by 23.59pm on the advertised closing date.
All applicants must complete an application form, along with your CV.

Any CV sent direct to the Recruitment Team and Recruiting Manager will not be accepted.

If you require a manual application form, then please contact the Recruitment Team via recruitment@aston.ac.uk.

Contact information

Enquiries about the vacancy:

Name: Prof. David J Webb
Job Title: Professorial Research Fellow (Aston Institute Of Photonic Technologies)
Email: d.j.webb@aston.ac.uk

Enquiries about the application process, shortlisting or interviews:
Recruitment Team via recruitment@aston.ac.uk or 0121 204 4500.

Additional information

Visit our website https://www2.aston.ac.uk/staff-public/hr for full details of our salary scales and benefits Aston University staff enjoy.

Salary scales: https://www2.aston.ac.uk/staff-public/hr/payroll-and-pensions/salary-scales/index

Benefits: Benefits and Rewards | Aston University

Working in Birmingham: https://www2.aston.ac.uk/birmingham

Employment of Ex-Offenders: Under the Rehabilitation of Offenders Act 1974, a person with a criminal record is not required to disclose any spent convictions unless the positions they applying for is listed an exception under the act.

Eligibility to work in the UK: You should ensure that you meet the eligibility requirements, including meeting the English language standards. If you do not meet the eligibility criteria, any application for a work visa would be unsuccessful. Please see UKVI guidance for further information on eligibility, knowledge of English requirements and approved test centres https://www.gov.uk/tier-2-general

With the end of free movement for EU/EEA/Swiss nationals from 1 January 2021, the UK's new immigration system applies to all non-UK/Irish nationals who require a visa.

Where an individual is subject to UK immigration control, they will require a visa to work in the UK.

The following individuals do not need a visa for the UK, but do still have to prove their right to work before employment can commence:

- **British Citizens or Irish Nationals**
- **EU/EEA/Swiss nationals with Settled or Pre-settled status under the EU Settlement Scheme**
- **Non-EEA nationals with Indefinite Leave to Remain/Settlement in the UK**

The main routes available for those who need a visa to work in the UK are **Skilled Worker**, **Global Talent** and the **Graduate Route**.

You can find further information about each of these visa routes on our candidate immigration page.

If you will conduct research in your role, you may need to apply for and obtain ATAS clearance before Aston can issue a Certificate of Sponsorship for your visa application. Please see below for further details.

Academic Technology Approval Scheme (ATAS):
If you will conduct research in your role and you apply for a Skilled Worker or Temporary

Worker GAE visa, you may need to apply for and obtain ATAS clearance before Aston can issue a Certificate of Sponsorship for your visa application.

This process can take at least 6 weeks to process, and Aston will consider this when confirming your expected start date. Processing times will increase between April and September and can longer to complete.

There is no fast-track option available. ATAS certificates will be processed in order of receipt.

You can find more information about ATAS on our candidate immigration page.

Before you start and Right to Work

90-day entry vignette

If you have applied for your visa outside of the UK, you will receive a vignette in your passport which is usually valid for 90 days. Please make sure to travel to the UK within the 'valid from' and 'valid to' dates on this visa. If you entered the UK before or after these dates, you would not 'activate' the visa and you would need to leave and re-enter the country.

You will also receive a decision letter confirming details about your immigration permission and where to collect your Biometric Residence Permit.

Cost of Living - Estate and Letting Agents

There are numerous Estate and Letting Agents in and around Birmingham that can help you find suitable accommodation. The Midland Landlord Accreditation Scheme provides a list of professional agencies and landlords who have applied with them for accreditation. Whilst accreditation is not a guarantee of quality, it provides some reassurance about the standard of the service they provide.

You can also use property search websites such as Rightmove or Zoopla.

Equal Opportunities

Aston University promotes equality and diversity in all aspects of its work. We aim to ensure, through our admissions policies for students, and our staff recruitment and selection processes that we encourage applications from all groups represented in the wider community at a local, national and international level.

The University will endeavour not to discriminate unfairly or illegally, directly or indirectly, against student or potential students, staff or potential staff. This commitment applies to all functions of the University and to any stage of an individual's career.

An Equal Opportunities Monitoring Form is included within the application form. Data you provide on the Equal Opportunities Monitoring Form will be included in a general database, for statistical monitoring purposes, enabling the University to monitor the effectiveness of its

Policy, Codes of Practice and Guidelines on Equal Opportunities in Employment. Individuals will not be identified by name.

Data Protection

Your personal data will be processed in compliance with the Data Protection Act 2018 and the General Data Protection Regulation ((EU) 2016/679) ("GDPR"). The University's Data Protection Policy and Privacy Notices, including the Job Applicant Privacy Notice can be found at https://www2.aston.ac.uk/data-protection. Your application will only be used to inform the selection process, unless you are successful, in which case it will form the basis of your personal record with the University which will be stored in manual and/or electronic files. Information in statistical form on present and former employees is given to appropriate outside bodies.

Full details of our terms and conditions of service and associated policies and procedures are available online at https://www2.aston.ac.uk/staff-public/hr/policies

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