

# The Alan Turing Institute

## POSTDOCTORAL RESEARCH ASSOCIATE – ENVIRONMENTAL SENSORS (ASG PROGRAMME)

### THE ALAN TURING INSTITUTE

There has never been a more significant time to work in data science and AI. There is recognition of the importance of these technologies to our economic and social future: the so-called fourth industrial revolution. The technical challenge of keeping our data secure and private has grown in its urgency and importance. At the same time, voices from academia, industry, and government are coming together to debate how these technologies should be governed and managed.

The Alan Turing Institute, as the UK's national institute for data science and artificial intelligence, plays an important part in driving forward advances in these technologies in order to change the world for the better.

The Institute is named in honour of Alan Turing, whose pioneering work in theoretical and applied mathematics, engineering and computing is considered to have laid the foundations for modern-day data science and artificial intelligence. The Institute's goals are to undertake world-class research, apply its research to real-world problems, driving economic impact and societal good, lead the training of a new generation of scientists, and shape the public conversation around data and algorithms.

After launching in 2015 with government funding from EPSRC and five founding universities, the Institute has grown an extensive network of university partners from across the UK and launched a number of major partnerships with industry, public and third sector. Today it is home to more than 500 researchers, a rapidly growing team of in house research software engineers and data scientists and a business team.

### BACKGROUND

Satellite sensors can now provide an amazing level of detail of the Earth surface, yet with sparse and imperfect ground-truth sensors to validate them, and due to their relatively short record (a few decades) their usefulness when used on their own is somewhat limited. To make new leaps in understanding environmental change and to improve prediction we must find intelligent ways to combine satellite data with surface sensors and the output from physics-based environmental simulators (e.g., climate models). To bridge these spatial scales and various modalities we are creating a team of scientists and engineers to build and deploy toolkits driven by real-world case studies. This effort will create the foundations for building UK research capacity in developing Digital Twins of the natural environment.

The Alan Turing Institute via the [AI for Science and Government \(ASG\) programme](#) is looking to recruit a Postdoctoral Research Associate (PDRA) to work with an interdisciplinary team across four institutes to join the large environmental research project entitled "*Bridging the spatial scales, from surface sensors to satellite sensors*".

### ROLE PURPOSE

The postholder will work closely with an interdisciplinary team of Senior Research Fellows and other PDRAs at the Turing, as well as collaborators at the British Antarctic Survey (BAS), Science and Technologies Facilities Council (STFC), and the UK Met Office.

The candidate may be from a scientific or computer science background. Their role will be to create the building blocks for developing Digital Twins of the natural environment, through the deployment of machine learning methods to work with satellite and surface sensors data using flexible, scalable and interpretable computing methods. The project will pay particular attention to uncertainty quantification. In addition, the PDRA will have the opportunity to contribute to an open-source toolkit for generic scientific image analysis, in collaboration with other members of the wider Turing community. These general approaches will enable applications across a range of scientific research domains, such as optical microscopy and the monitoring of wildlife from remote sensing data.

The PDRA will play an active part in all aspects of research from data preparation, to the development of research questions, modelling and analysis, and writing up/publication. Technical meetings will take place between the partner institutions, establishing a robust platform for developing future programmes between environmental science researchers, The Alan Turing Institute and the wider scientific community. This is a collaborative research role and so it is crucial that you enjoy working with others, and are responsive within an interdisciplinary research environment.

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## DUTIES AND AREAS OF RESPONSIBILITY

You will be expected to work closely with the project leaders, and to:

- Work collaboratively with researchers, senior investigators from across the Turing and external partners on the project;
- Deploy machine learning methods for environmental prediction, scientific understanding, planning and monitoring;
- Build upon open and accessible tools for the environmental research community, including [Pangeo.io](https://pangeo.io);
- Help create a friendly and approachable community of environmentally-focused experts, datasets and engineers, and facilitate integration with Turing's research programmes;
- Attend and present research findings and papers at academic and professional conferences, and to contribute to the external visibility of the Turing;
- Participate in the organisation of research workshops and other events.

Other duties

- Teaching may be required as part of collaboration work

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## PERSON SPECIFICATION

Skills and Requirements  Post holders will be expected to demonstrate the following	Essential (E)	Tested at application(a)
	Desirable (D)	Tested at interview (i)
<b>Education</b>		
Research Associate level: A PhD degree or equivalent professional experience in a field with significant elements of computational statistics or statistical machine learning.	E	A
Research Assistant level: Near completion of a PhD or equivalent level of professional experience in a field with significant elements of computational statistics or statistical machine learning.	E	A
<b>Knowledge and Experience</b>		
Experience in the deployment and/or application of statistical machine learning methods.	E	A
Experience in managing, structuring, and analysing research data.	E	I
Fluency in one or more modern statistical programming languages used in research in data science and artificial intelligence, such as Python or Julia.	E	A
Computational statistics, particularly Bayesian modelling and Bayesian statistics	D	A
Experience using data visualisation tools	D	A
Working with large datasets and writing scalable code	D	A
Demonstrated enthusiasm and ability to rapidly assimilate new computational and statistical ideas and techniques on the job and apply them successfully.	E	I
Applies knowledge and experience of professional and/or technical practice gained from experience or following a course of study.	E	A/I
An interest in methodological advances in environmental sciences	D	I
Contribution and engagement with open source software communities	D	A
Interpret and shares knowledge by advising and guiding others as required.	D	A/I
Undertakes periodic updating of skills and knowledge.	D	A/I
<b>Communication</b>		
Excellent written and verbal communication skills, including experience in the visual representation of quantitative data, the authoring of research papers or technical reports, and giving presentations or classes on technical subjects.	E	A
Ability to communicate more complex, specialist or conceptual information clearly and persuasively, presenting compelling arguments to influence and/or negotiate satisfactory outcomes.	E	A/I
<b>Teamwork and Motivation</b>		
Ability to lead one's own work independently, including planning and execution, and to collaborate productively as part of a team.	E	A

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The ability to work in a team and interact professionally within a team of researchers and PhD students.	E	A
<b>Decision Making</b>		
Works with others to make collaborative decisions that may be operational or strategic and impact immediate team or work area only.	E	A/I
<b>Analysis and Research</b>		
An understanding of the importance of good practice for producing reliable software and reproducible research (e.g. version control, Jupyter notebooks)	E	I
<b>Teaching and Learning</b>		
For Research Roles Only -Teaching may be required	E	A/I
<b>Other Requirements</b>		
Commitment to meeting deadlines	E	A/I
Flexible attitude towards work	E	I
Commitment to EDI principles and to the Organisation values	E	I

Please note that job descriptions cannot be exhaustive, and the post-holder may be required to undertake other duties, which are broadly in line with the above key responsibilities.

# The Alan Turing Institute

## Our Values

The Alan Turing Institute is committed to equality diversity and inclusion and to eliminating discrimination. All employees are expected to embrace, follow and promote our [EDI Principles](#) and [Rules of the Game](#)



**Respect** – We treat everyone with respect, dignity and kindness and acknowledge the experiences, skills and contributions of others.

**Trust** - We communicate openly and honestly to support an environment where we have trust in each other.

**Transparency** – We seek to ensure that everyone understands the how and the why of our decisions and actions. We take on board feedback when those decisions are challenged.

**Inclusivity** – We are committed to continuously learning how to be more inclusive by listening to those facing barriers.

**Leadership** – We recognise creating an inclusive, diverse and equitable institute requires leadership from all. We stand up and speak out when change is needed.

**Integrity** – We recognise that how we work is as important as our outputs and seek to exemplify best practice in all our decisions.

## APPLICATION PROCEDURE

If you are interested in this opportunity, please click the apply button below. You will need to register on the applicant portal and complete the application form including your CV, covering letter and contact details for your referees. If you have questions about the role or would like to apply using a different format, please contact them on 0203 862 3357 or 0203 862 3340, or email [recruitment@turing.ac.uk](mailto:recruitment@turing.ac.uk).

**CLOSING DATE FOR APPLICATIONS: 12 January 2021**

## TERMS AND CONDITIONS

This full time post is offered on a two year fixed term basis. The start date for this role is immediate and the role holder must be available to start no later than 01 April 2021. The annual salary is £35,000-£41,000 plus excellent benefits, including flexible working and family friendly policies, <https://www.turing.ac.uk/work-turing/why-work-turing/employee-benefits>

For research positions: Candidates who have not yet been officially awarded their PhD will be appointed as Research Assistant within the salary range £32,000-£34,000 per annum

This job description is written at a specific time and is subject to change as the demands of the Institute and the role develop. The role requires flexibility and adaptability and the post holder needs to be aware that they may be asked to perform tasks and be given responsibilities not detailed in this job description.

## EQUALITY, DIVERSITY AND INCLUSION

The Alan Turing Institute is committed to creating an environment where diversity is valued and everyone is treated fairly. In accordance with the Equality Act, we welcome applications from anyone who meets the specific criteria of the post regardless of age, disability, ethnicity, gender reassignment, marital or civil partnership status, pregnancy and maternity, religion or belief, sex and sexual orientation. Reasonable adjustments to the interview process can also be made for any candidates with a disability.

***Please note all offers of employment are subject to continuous eligibility to work in the UK and satisfactory pre-employment security screening which includes a DBS Check.***

***Full details on the pre-employment screening process can be requested from [HR@turing.ac.uk](mailto:HR@turing.ac.uk).***