

# The Alan Turing Institute

## Research Associate, Machine Learning for Sea Ice Prediction

### THE ALAN TURING INSTITUTE

There has never been a more significant time to work in data science and artificial intelligence (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

The [Data Science for Science and Humanities programme](#) works alongside researchers from all disciplines across the Turing's university partner network, and with national research facilities, to make effective use of state of the art methods in artificial intelligence and data science.

The programme is looking to recruit a Research Associate (RA) to develop new machine learning/deep learning methods to monitor and predict sea ice change around Antarctica using synthetic-aperture radar (SAR) imagery and other observational data from satellite and surface sensors, as part of an international collaboration.

The candidate will work within Turing's [Environment and Sustainability](#) research theme, which seeks to develop methods to provide the meaningful insight to inform decision-making, improve risk management and enhance our resilience to climate change will require working across disciplines, bringing together methodology and expertise from different fields to develop tools and computational frameworks that can integrate data from multiple sources, available at different spatial and temporal resolutions and with different biases and uncertainties.

### ROLE PURPOSE

We are seeking a Research Associate to join a newly funded research programme to explore the environmental drivers of Antarctic sea ice as part of a national and international collaboration.

In addition, the RA will have the opportunity to contribute to an open-source toolkit for 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 RA 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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We are looking for experience in one or more of the following areas: statistical modelling; statistical machine learning; applied data analysis; modern statistical programming languages including probabilistic programming; applying the principles of reproducible data science.

Applications are welcome from a wide range of disciplinary backgrounds, including the physical sciences, computer science, statistics, or mathematics, and particularly from candidates whose prior research has a strong computational focus.

The postholder will be line managed by Dr Scott Hosking, Senior Research Fellow, and will work closely with other environmental researchers at the Turing, as well as collaborators at the British Antarctic Survey (BAS) and University of Leeds.

## **DUTIES AND AREAS OF RESPONSIBILITY**

- Attend and present research updates at regular meetings, and contribute to the external visibility of the Institute.
- Write or contribute to publications or disseminate research findings using other appropriate media
- Adhere to modern principles of reproducible data science in carrying out their responsibilities.
- Drive collaboration with academic experts and broader research partners from across the Turing and the wider Turing / project community.
- Help create a friendly and approachable community of environmentally-focused experts, datasets and engineers, and facilitate integration with Turing's research programmes;
- Contribute to the broader research aims and challenges of the Turing Data Science for Science and Humanities programme, and ensure positive feedback to the project partnership.
- Contribute to the life of the Institute and support its community

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. This job description is written at a specific time and is subject to changes as the demands of the Institute and the role develop

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## PERSON SPECIFICATION

| Skills and Requirements  | Essential (E)<br><br>Desirable (D) | Tested at application(A)<br><br>Tested at interview (I) |
|--|------------------------------------|---|
| <p>Post holders will be expected to demonstrate the following</p>  |                                    |   |
| <b>Education/Qualification</b>   |                                    |   |
| A PhD (or equivalent experience and/or qualifications) in a relevant area which will include the Physical Sciences, Mathematics, Statistics, Computer Science, or related discipline   | E                                  | A/I   |
| <b>Knowledge and Experience</b>  |                                    |   |
| Demonstrable experience or interest in statistical modelling; statistical machine learning; modern statistical programming languages including probabilistic programming; or applying the principles of reproducible data science.   | E                                  | A/I   |
| Experience in performing data analysis on substantial real-world problems  | E                                  | A/I   |
| Significant experience of using a modern statistical programming language (e.g. Python)  | E                                  | A/I   |
| Ability to understand and apply the principles of reproducible data science in previous research   | E                                  | A/I   |
| Experience in working with modern artificial intelligence technologies   | E                                  | A/I   |
| Experience of developing and documenting analysis workflows for scientific research projects.  | E                                  | A/I   |
| A level of scientific comprehension sufficient to conduct relevant literature reviews.   | E                                  | A/I   |
| Ability to critically evaluate experimental results and derive evidence-driven conclusions.  | E                                  | A/I   |
| Experience in the evaluation of predictive models in environmental science   | D                                  | A/I   |
| Demonstrable interest or experience in environmental research  | D                                  | A/I   |
| Contribution and engagement with open source software communities  | D                                  | A/I   |
| <b>Communication</b>   |                                    |   |
| Excellent written and verbal communication skills, including experience in the visual representation of quantitative data, documentation of software packages or data resources, the authoring of research papers or technical reports, and giving presentations or classes on technical subjects. | E                                  | A/I   |
| Proven ability to communicate complex, specialist or conceptual information/research findings clearly and persuasively to diverse audiences.   | E                                  | A/I   |
| Ability to communicate complex, specialist or conceptual information clearly and persuasively, presenting compelling arguments to influence and/or negotiate satisfactory outcomes.  | E                                  | A/I   |
| <b>Decision-Making Processes and Outcomes</b>  |                                    |   |

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|   |   |     |
|---|---|-----|
| Ability to lead own work independently, and make independent decisions  | E | A/I |
| Work with others to make collaborative decisions that may be operational or strategic which may impact the immediate team or work area.               | E | A/I |
| Recommend and advise on available options for decisions that affect operational processes, taking into account any risks.                             | E | A/I |
| <b>Initiative and Problem Solving</b>   |   |     |
| Use judgement to analyse and solve problems, and take action to prevent recurrence of problems.   | E | A/I |
| Consider possible solutions to identify those that offer wider benefits, and obtain evidence to support thinking.                                     | E | A/I |
| <b>Service Delivery</b>   |   |     |
| Proactive approach to managing stakeholders and their requirements and identifying opportunities for collaboration                                    | E | A/I |
| Adapt services and systems to meet stakeholders' needs and identify ways of improving standards. Learns from issues and takes action to resolve them. | E | A/I |
| <b>Analysis and Research</b>  |   |     |
| Ability to plan and implement rigorous analysis plans.  | E | A/I |
| Identify and use a range of standard sources to gather and analyse routine data and produce reports that can be interpreted by others.                | E | A/I |
| Understand when additional data is required and identify appropriate sources. Produce reports that identify key issues and findings.                  | E | A/I |
| <b>Liaison and Networking</b>   |   |     |
| Participate in networks within the organisation or externally to share knowledge and information in order develop practice or help others learn.      | E | A/I |
| Network with others with shared interests, collaborating on projects and strengthening future relations.  | E | A/I |
| <b>Other Requirements</b>   |   |     |
| Commitment to meeting deadlines   | E | I   |
| Flexible attitude towards work  | E | I   |
| Commitment to EDI principles and to the Organisation values   | E | I   |

# 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 Our Values.

### Our values

- Trust**  
We create an environment where we have trust and can be trusted
- Inclusivity**  
We expect our Turing community to contribute to a culture that is inclusive and free of barriers
- Respect**  
We all have different roles, priorities and challenges but our shared purpose is the same
- Leadership**  
Leadership is everyone's business; Turing leaders set the right tone and lead by example
- Transparency**  
Everyone should understand the how and the why of our decisions and actions
- Integrity**  
We are all ambassadors for the Turing's mission of changing the world for the better

## 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 and covering letter. If you have questions about the role or would like to apply using a different format, please contact us on 020 3862 3575 or 0203 862 3340, or email [recruitment@turing.ac.uk](mailto:recruitment@turing.ac.uk).

**CLOSING DATE FOR APPLICATIONS: 24 April 2022 at 23:59**

## TERMS AND CONDITIONS

This full time post is offered on a 2-year fixed term basis. The annual salary is £37,000 - £44,000 plus excellent benefits, including flexible working and family friendly policies, <https://www.turing.ac.uk/work-turing/why-work-turing/employee-benefits>

Candidates who have not yet been officially awarded their PhD will be appointed as Research Assistant with a salary range of £34,510 per annum

## 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.

We are committed to building a diverse community and would like our leadership team to reflect this. We therefore welcome applications from the broadest spectrum of backgrounds.

Reasonable adjustments to the interview process will be made for any candidates with a disability.

***Please note all offers of employment are subject to obtaining and retaining the right 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).***