The Alan Turing Institute

POST-DOCTORAL RESEARCH ASSOCIATE IN MACHINE LEARNING AND FOOD SECURITY

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

The two-year PDRA postholder will join The Alan Turing Institute to work within its AI for Science and Government programme. This project will be run within the SPF Wave 1 funded programme, AI for Science and Government, based at The Alan Turing Institute. The programme is focussed on research in data science, with accompanying translational activities to ensure impact in the fields applied science, engineering, urban analytics governance, as well as education and training components, in keeping with the vision, mission and charitable aims of the Turing Institute. This post is an appointment to the **Environment and Sustainability** cross-theme project specifically, the **'Impact of Climate Change on Agriculture'** workpackage.

This PDRA will investigate applications of machine learning to model the impact of climate change on food security. They will be integrated into an interdisciplinary team at the Turing and also work closely with research groups at the John Innes Centre, Rothamstead Research, and the MetOffice. Applications are welcome from a wide range of disciplinary backgrounds, including the biological and physical sciences, environmental sciences, computer science, statistics, or mathematics, and particularly from candidates whose prior research has a strong computational focus.

ROLE PURPOSE

The PDRA's role will be to apply machine learning approaches to analyse and reconcile highly disparate datasets, such as climate records, longitudinal crop yield data, phenotype images, and transcriptome data with the aim of connecting existing models on the genotype-phenotype level to those at the phenotype-environment level.

As part of this the PDRA will also contribute to an open-source toolkit for generic scientific image analysis, in collaboration with other members of the group and the wider Turing community. These general approaches will enable applications across a range of scientific research domains, such as phenotype characterisation, optical microscopy, and the analysis of satellite images.

The PDRA will be involved in all aspects of research - the formulation of research questions, data preparation, modelling, analysis, and the preparation of publications. This is a highly collaborative role in a highly interdisciplinary environment, both within the Turing and through our partnership with the diverse array of external research institutions mentioned above.

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DUTIES AND AREAS OF RESPONSIBILITY

- Prepare and reconcile disparate data sets from a variety of research disciplines, including environmental science, agriculture, plant biology, and genetics.
- Apply a variety of machine learning approaches and more general statistical data analysis methods to a broad range of data types
- Participate in the development of research questions
- Engage with and integrate a variety of existing modelling frameworks for climate prediction, crop growth, and plant development.
- Work effectively as part of a team of PDRAs in collaboration with the partner institutes
- Contribute to the development of general software tools for the analysis of scientific image data together with a team of PDRAs at the Turing.
- Communicate effectively across interdisciplinary teams of research groups
- Participate in the writing of research outputs

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) Desirable (D)	Tested at application(a) Tested at interview (i)
Education		
Research Associate level: PhD or equivalent level of qualification in computer science or in the physical, mathematical, biological, or environmental sciences, preferably with a strong computational focus.	**E**	**A**
Research Assistant level: Near completion of a PhD or equivalent level of qualification in computer science or in the physical, mathematical, biological, or environmental sciences, preferably with a strong computational focus.	**E**	**A**
Hold a degree or Master Degree in any scientific or science-related discipline.	**E**	**A**
Knowledge and Experience		
Experience in managing, structuring, and analysing research data.	**E**	**A/I**
Fluency in one or more programming languages used in research in data science and artificial intelligence, such as Python or R.	**E**	**A/I**
Proven experience of developing statistical and computational models to address challenging research problems.	**E**	**A/I**
Demonstrated enthusiasm and ability to rapidly assimilate new computational and statistical ideas and techniques on the job and apply them successfully.	**E**	**A/I**
Substantial experience of interdisciplinary collaboration.	**E**	**A/I**
Experience in the development and/or application of statistical machine learning methods.	**D**	**A/I**
Experience with the reconciliation of large, disparate datasets.	**D**	**A/I**
Research or collaboration experience in the context of one of the following areas: agriculture, genetics, meteorology, ecology, environmental sciences, or economics.	**D**	**A/I**
Ability to lead one's own work independently, including planning and execution.	**E**	**A**
An understanding of the importance of good practice for producing reliable software and reproducible research (e.g. version control, literate analysis tools such as Jupyter and Rmarkdown)	**E**	**A/I**
Ability to manage time commitments to multiple projects effectively, and to organise collaboration meetings independently, and to take responsibility for the leadership of sub-projects.	**E**	**A/I**

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Communication		
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/I**
Ability to communicate and liaise between collaborators from different interdisciplinary backgrounds.	**E**	**A/I**
Teamwork and Motivation		
Ability to work effectively across disciplinary boundaries, both as part of an interdisciplinary team and in close collaboration with external partners in different disciplines.	**E**	**A/I**
The ability to work and interact professionally within a team of researchers/PhD students and to collaborate productively as part of a team.	**E**	**A**
Service Delivery		
Ability to work across the Research Team/Programme, to contrinute and assist in a number of research activities.	**E**	**A/I**
Ability to keep accurate and up to date knowledge of services available in own and related areas of work.	**E**	**A/I**
Decision Making		
Works with others to make collaborative decisions that may be operational or strategic and impact immediate team or work area only.	**E**	**A/I**
Analysis and Research		
An ability to formulate pertinent research questions, both general and focused.	**E**	**A/I**
Ability to identify or design computational and statistical analysis approaches to address specific research questions	**E**	**A/I**
An understanding of the importance of good practice for producing reliable software and reproducible research (e.g. version control, literate analysis tools such as Jupyter and Rmarkdown)	**E**	**A/I**
Teaching and Learning		
Teaching may be required as part of the role	**E**	**A/I**
Other Requirements		
Commitment to meeting deadlines	**E**	**A/I**
Flexible attitude towards work	**D**	**A**
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.

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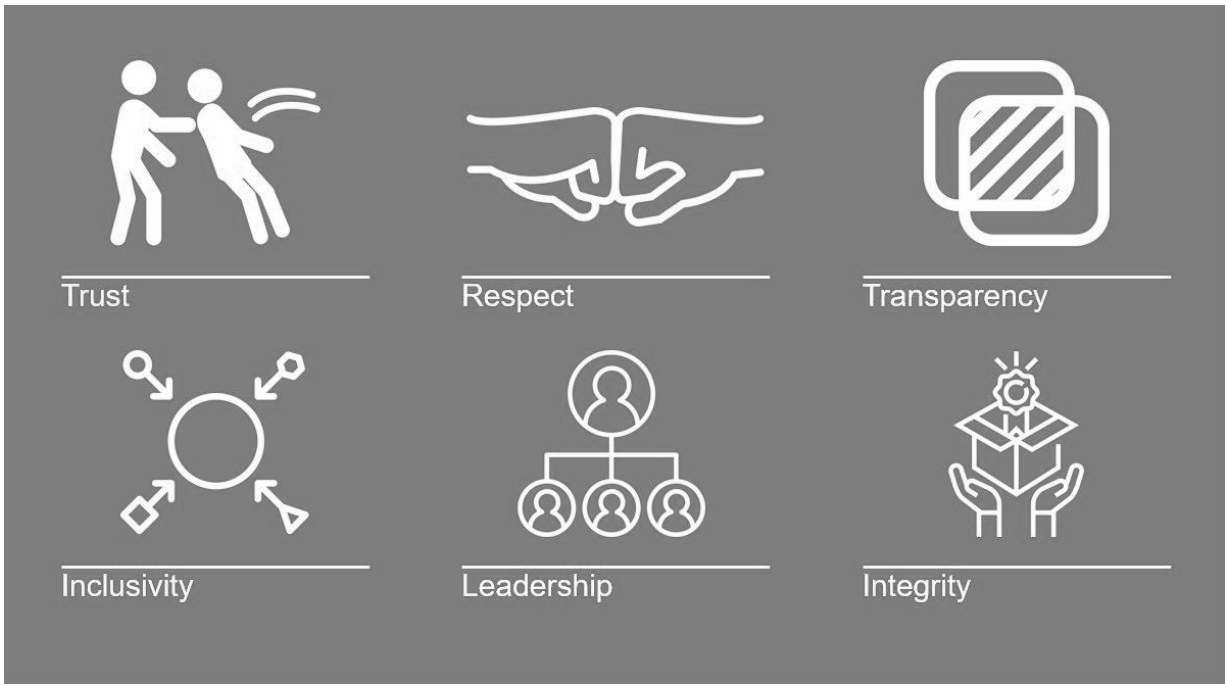
Our Values

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 to 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 3340, or email recruitment@turing.ac.uk.

CLOSING DATE FOR APPLICATIONS: 13 January 2021 at 23:59.

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, gender reassignment, marital and civil partnership status, pregnancy, religion or belief or 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***.***