Research Associate, UK Spatial, Climate, and Health PPL Community

BACKGROUND ON 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 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 several 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.

NEW PROBABILISTIC PROGRAMMING PILLAR

In 2022, the Alan Turing Institute signalled its intention to establish a portfolio of foundational AI research, which would complement the strengths of the institute around applications of AI and AI policy. An initial portfolio of research across three pillars, foundation models, game theory, and probabilistic programming, was launched in early 2023.

We are looking for one **Research Associate** to support and enable the delivery of the "Programmable Inference" theme within the Probabilistic Programming Pillar. This theme will be directed by Will Pearse (Imperial College London), Seth Flaxman (University of Oxford) and Juliette Unwin (University of Bristol).

A UK SPATIAL, CLIMATE, AND HEALTH PROBABILISTIC PROGRAMMING COMMUNITY

For the UK to achieve global leadership in Probabilistic Programming Languages (PPL), it is necessary to cultivate a self-sustaining research community. We will help realise this vision by supporting (1) conceptual advances in focal research areas of strategic importance to the UK (climate, health, and spatial modelling), (2) forecasting contests to build a community based around addressing policy needs, and (3) in-person and online training sessions.

ROLE DESCRIPTION

The research associate will be based the Turing Institute and will be responsible for the work outlined above. In addition, as an employee of the Alan Turing Institute (Turing), the research associate will have access to the Turing offices in London, where they can interact with the wider Turing community. The research associate will be a driving force behind work in the project, focusing on three main areas:

1: Conceptual advances in biodiversity forecasting
The Research Associate will work alongside three PhD students (one supervised by each of Pearse, Flaxman, and Unwin) to develop forecasts using probabilistic programming. The Research Associate will primarily focus on biodiversity forecasting, building forecasts of future UK habitat in response to climate and human land-use changes, through direct collaboration with Dr Pearse. This approach will likely make use of a Phylogenetic Generalised Linear Mixed Model approach (as outlined in Gallinat & Pearse 2021; DOI: 10.1111/oik.08048), and so will be applicable to the health-modelling (led by Dr Unwin) and involve spatial components (led by Dr Flaxman).

2: Forecasting contests
The Research Associate will assist with the planning, logistics, and running of the forecasting contest. This will include, but not be limited to, preparing datasets and example code for the competition entrants, advertising the contest, and co-developing contest ideas with other members of the team. This will give the Research Associate the opportunity to build their professional network by interacting with not just the entrants, but potential users of the forecasts (e.g., policymakers who wish to make use of the insights from the forecasts).

3: In-person trainings
The Research Associate will help develop and grow the Probabilistic Programming Language community by running and co-developing training sessions based around Probabilistic Programming. This will include, but not be limited to, organising mailing lists of potential attendees, developing materials for use during the sessions, and collecting feedback about events and requested future events.

DUTIES AND AREAS OF RESPONSIBILITY

The duties of the postholder will include:

- Undertake research focused around the use of probabilistic programming in biodiversity modelling (#1 in the role statement above)
- Manage and support the forecasting contests to be run at the centre (#2 in the role statement above)
- Organise and carry out in-person trainings (#3 in the role statement above)
- Work closely with other members of the project team.
- Keep on top of the state of the art in the relevant literature, in particular programmable inference, Bayesian inference, and uncertainty quantification.
- Disseminate findings and results from work in the project by leading peer-reviewed journal articles
- Disseminate findings from work in the project through conference presentations and/or pubic-facing briefing notes

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 ATI and the role develop.

The Alan Turing Institute

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 in Biology, Statistics, Computer Science, or a related discipline.	E	A
Research Assistant level: Near completion (thesis submitted) of a PhD or equivalent level of professional qualification in Biology, Statistics, Computer Science, or a related discipline.	E	A
Knowledge and Experience		
A solid background in one or more of the following: Bayesian inference, uncertainty quantification, programmable inference, biodiversity science.	E	A/I
Experience in design, development and implementation of research software tools and libraries	D	A/I
Experience of programming in Stan or equivalent language (e.g., NumPyro)	D	A/I
Experience in using current software engineering tools for managing and coordinating distributed projects, such as git and github for distributed version control.	D	A/I
Experience in publishing research papers, code libraries or technical reports and giving presentations or classes on technical subjects.	E	A/I
Ability to create and promote a collegial and collaborative approach to interdisciplinary research activities.	D	A/I
Communication		
Excellent writing skills and a proven ability to communicate complex, specialist, or conceptual information/research findings clearly and persuasively to diverse audiences, including the ability to explain technical concepts to technical and nontechnical audiences.	E	A/I
Analysis and Research		
Ability to organise working time, take initiative, and carry out research independently, under the guidance of the PI	E	I
Liaison and Networking		
Evidence of participation within an organisation or discipline-related network to share knowledge and information in order develop practice or help others learn	D	A/I
Other Requirements		
Commitment to EDI principles and to the Organisation values	E	I

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 at recruitment@turing.ac.uk.

CLOSING DATE FOR APPLICATIONS: 2 June 2024 at 23:59 (UK, BST)

TERMS AND CONDITIONS

This full-time post is offered on a 30 months fixed-term basis. The annual salary is £44,180 - £49,966 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 at a salary of £41,352 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 making sure our recruitment process is accessible and inclusive. This includes making reasonable adjustments for candidates who have a disability or long-term condition. Please contact us at adjustments@turing.ac.uk to find out how we can assist you.

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***.***