The Alan Turing Institute

**RESEARCH ASSOCIATE, MATHEMATICS OF CITIES**

**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 post is funded through the UKRI AI for Science and Government programme. Across almost every sector of UK society, enhanced computing power has created need for new methods and tools to help harness the insights from the large quantities of data now available and to expand the speed and scope of what we can learn from it. The ASG programme has been established out of a shared recognition that the UK government require the transformative capacity of AI and data science to increase its efficacy if the UK is to maximise the potential of its governance and administrative systems, maintain its world-class scientific leadership, and continue its commitment to social progress for the benefit of the population. The programme was established in 2018 supported by five-years of funding totalling £38.8M. Work began on 1st November 2018. Urban analytics is an important theme in the Programme and we are seeking to appoint a Research Associate who will contribute to its economic modelling dimension – particularly developing urban input-output models.

**ROLE PURPOSE**

The project is looking for a research associate to develop and apply mathematical and computer modelling methods, with special reference to the economics of cities, using census and related data. The candidate may be from various backgrounds provided they have core skills in mathematics, computing and modelling. As a researcher, you will work closely with Professor Sir Alan Wilson and the Urban Analytics Programme Director, Professor Mark Birkin, and the wider inter-disciplinary team based at the Turing Institute. You 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. This is a collaborative research role and so it is crucial that you enjoy working with others within an iterative research process. We hope that the appointed candidate will develop to take ownership of a key strand of work on the project, under the mentorship of the PI and Co-Is.

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**DUTIES AND AREAS OF RESPONSIBILITY**

The research associate will work closely with the project investigators with the aim:

- To build models of the economics of cities, embracing both spatial interaction and input-output modelling.
- To establish a sound research base within the Alan Turing Institute in order to pursue individual and collaborative research of outstanding quality, consistent with making a full active research contribution in line with the research strategy outlined by the PI.
- To write or contribute to publications or disseminate research findings using other appropriate media.
- To attend and present research findings and papers at academic and professional conferences, and to contribute to the external visibility of the Institute.
- To participate in and to develop internal and external partnerships, for example to identify sources of funding, generate income, obtain projects/datasets, or build relationships for future activities.
- To ensure compliance with secure handling of data and health and safety in all aspects of work.

Other duties

- Teaching may be required as part of collaboration work

Please note that job descriptions cannot be exhaustive, and the postholder 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<br>Post holders will be expected to demonstrate the following | Essential (E)<br>Desirable (D) | Tested at application(a)<br>Tested at interview (i) |
|---|---|---|
| **Education** | | |
| Research Associate: Hold a PhD (or equivalent) in a relevant area, which will include mathematical, computing and modelling skills or a closely related discipline, or equivalent research, industrial or commercial experience. | **E** | **A** |
| Research Assistant: Near competition of a PhD (or equivalent) in a relevant area, which will include mathematical, computing and modelling skills or a closely related discipline, or equivalent research, industrial or commercial experience | **E** | **A** |
| **Knowledge and Experience** | | |
| Experience with computational processing of large data bases | **E** | **A** |
| Fluency in at least one programming language (we particularly work in Python) | **E** | **A I** |
| Experience of working with census data | **D** | **A** |
| Experience working with large research data sets and (semi)structured data | **D** | **A I** |
| An understanding of the importance of good practices for producing reliable software and reproducible analyses | **D** | **A I** |
| Evidence of high-quality publication(s) in a relevant field (published or in-press) commensurate with your career stage | **D** | **A** |
| **Communication** | | |
| Excellent written communication skills, including the ability to write for publication, present research proposals and results, and represent the research group at meetings. | **E** | **A** |
| Adapts the style of communication to the audience and ensures understanding. | **E** | **I** |
| Ability to communicate complex, specialist or conceptual information clearly and persuasively, presenting compelling arguments to influence and/or negotiate satisfactory outcomes. | **E** | **I** |
| **Decision-Making Processes and Outcomes** | | |
| Independently make decisions which are low risk and that mainly affect themselves or a small number of people and are guided by regulation and practice. | **E** | **A I** |
| Work with others to make collaborative decisions that may be operational or strategic and impact immediate team or work area only. | **E** | **I** |
| Recommend and advise on available options for decisions that affect operational processes, taking into account any risks. | **E** | **AI** |

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| | | |
|---|---|---|
| **Initiative and Problem Solving** | | |
| Uses judgement to analyse and solve problems, and take action to prevent recurrence of problems. | **E** | **I** |
| Consider possible solutions to identify those which offer wider benefits, and obtain evidence to support thinking. | **E** | **AI** |
| **Analysis and Research** | | |
| Identify and use a range of standard sources to gather and analyse routine data and produce reports that can be interpreted by others. | **E** | **AI** |
| Design and use data gathering and analytical methods appropriate for each investigation. Recognises and accurately interprets patterns and trends. Understands when additional data is required and identifies appropriate sources. Produces reports that identify key issues and findings. | **E** | **AI** |
| **Liaison and Networking** | | |
| Participates in networks within the organisation or externally to share knowledge and information in order develop practice or help others learn. | **E** | **I** |
| Networks with others with shared interests, collaborating on projects and strengthening future relations. | **E** | **I** |
| **Other Requirements** | | |
| Commitment to EDI principles and to the Organisation values | **E** | I |

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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 Our Values.


**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 3970 2148 or 0203 862 3340, or email recruitment@turing.ac.uk.

## TERMS AND CONDITIONS

This part-time post is offered on a fixed-term basis until 31st March 2023. The successful candidate will be required to be in post ideally by 15th August 2022. The annual salary range is £38,000 - £44,000 (pro-rated for part-time hours) plus excellent benefits, including flexible working and family friendly policies, https://www.turing.ac.uk/work-turing/why-work-turing/employee-benefits.

Secondments of suitable staff from relevant organisations (business, universities, government or charities) are welcome.

Candidates who have not yet been officially awarded their PhD will be appointed as Research Assistant at a salary of £36,235 per annum (pro-rated for part-time hours).

## 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 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***.***