

The Alan Turing Institute

Postdoctoral Research Associate – Molecular Biology

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 Environment and Sustainability research initiative funded through the [AI for Science and Government](#) research programme (ASG) at The Alan Turing Institute (*'the Turing'*) is looking to recruit a Postdoctoral Research Associate (PDRA) to develop new methods to identify, extract and refine molecular structures from cryo-electron microscopy image data. The candidate will work with an interdisciplinary team at the Turing and in close collaboration with groups at the University of Cambridge, MRC Laboratory of Molecular Biology (MRC-LMB) and the Science and Technologies Facilities Council (STFC). Applications are welcome from a wide range of disciplinary backgrounds, including the biological and physical sciences, computer science, statistics, or mathematics, and particularly from candidates whose prior research has a strong computational focus.

ROLE PURPOSE

The PDRA will work as part of a team to develop computer vision and machine learning approaches to enable the intelligent sampling of cryo-electron microscopy image data. These approaches may be informed by prior knowledge and/or physical models of molecular structure, with the aim of determining molecular structures with enhanced resolution, and detail regarding dynamic states.

The PDRA will contribute to an open-source toolkit for generic scientific image analysis, in collaboration with other members of the DS4S group and 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 the biological sciences, the Turing and the wider scientific community. This is a collaborative research role and so it is crucial that you enjoy working with others within an interdisciplinary research environment.

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DUTIES AND RESPONSIBILITIES

- To develop ML or relevant techniques to understand, interpret and extract features from experimental datasets
- Implement these techniques in a commonly used programming language, like Python
- Gather annotated datasets that can be used to develop ML algorithms
- To work collaboratively with researchers, senior investigators from across the Turing and external partners on the project.
- Regular contact with staff internally and with the collaborators across Cambridge, MRC-LMB, UCL and Turing Institute sites
- Assist in organising and coordinating technical meetings and relevant project events as appropriate
- To attend and present research findings and papers at academic and professional conferences, and to contribute to the external visibility of the Turing.
- To participate in the organisation of research workshops and other events.
- To help create a friendly and approachable community of biosciences-focused experts, datasets and engineers, and facilitate integration with Turing's research programmes.

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		
PhD or equivalent level of experience in biological and physical sciences, computer science, statistics, or mathematics, and particularly from candidates whose prior research has a strong computational focus	E	A
Hold a degree or Master Degree in any scientific or science-related discipline	E	A
Knowledge and Experience		
Fluency in at least one programming language (we particularly work in Python).	E	A/I
Familiarity with one or more machine learning toolsets (e.g. SciKit Learn, TensorFlow, PyTorch, etc.)	E	A/I
Experience in managing, structuring, and analysing research data.	E	A/I
Interest in methodological advances in biological sciences.	E	A/I
Proven experience of developing statistical and computational models to address challenging research problems.	E	A/I
Experience in structural biology, bioinformatics or computational biology.	D	A/I
Experience in cryoEM or optical microscopy method development or application.	D	A/I
Evidence of algorithm development for scientific research.	D	A/I
Track record of working with large datasets and writing scalable code.	D	A/I
Experience using data visualisation tools.	D	A/I
Evidence of high-quality publication(s) in a relevant field (published or in-press) commensurate with your career stage.	D	A/I
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 adapt the style of communication to the audience and ensure understanding.	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

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Liaison and Networking		
Ability to liaise between collaborators from different interdisciplinary backgrounds.	E	A/I
Service Delivery		
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
Planning and Organising		
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
Initiative and Problem Solving		
An ability to formulate pertinent research questions, both general and focused.	E	A/I
Analysis and Research		
Ability to identify or design computational and statistical analysis approaches to address specific research questions	E	A/I
Teaching and Learning		
Teaching may be required	E	A/I
Other Requirements		
Commitment to meeting deadlines	E	I
Flexible attitude towards work	D	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.

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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: 10 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 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.