

## Turing Fellow Call 2021

### Call Document

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## Summary

The Alan Turing Institute is launching a new call for Turing Fellows on 12 May 2021. New applicants and current Turing Fellows based at the Institute's **13 university partners** are invited to apply.

Turing Fellows are scholars with proven research excellence in data science, artificial intelligence (AI) or a related field whose research would be significantly enhanced through active involvement with the Turing network of universities and partners.

We are committed to building a diverse network of fellows and encourage applicants from a range of backgrounds to apply. Current Turing Fellows will be eligible to apply, as well as the call being open to new applicants who meet the eligibility criteria.

Successful applicants will be appointed as Turing Fellows for 12 months initially with all fellowships commencing on 1 October 2021.

The Turing Fellowships within this call will be offered on an unfunded basis with various benefits that being part of the Turing's vibrant, interdisciplinary, and collaborative research community brings. The call is being centrally managed and coordinated by the Turing, however each University will be responsible for the assessment of applicants from their institution.

## Key Information

- Call opens for applications via [Flexi-Grant](#) portal on 12 May 2021.
- Application period remains open for six weeks until 23 June 2021.
- Turing Fellowships will commence on 1 October 2021 for 12 months.
- Full details will be provided on the [Turing Fellow Call webpage](#).
- For general queries, please contact the [University Liaison Manager and/or Turing University Lead](#) at your university.
- Flexi-Grant enquiries: [academic-engagement@turing.ac.uk](mailto:academic-engagement@turing.ac.uk).

## About Turing Fellowships

Turing Fellows are established scholars with proven research excellence in data science, artificial intelligence, or a related field. They contribute to new ideas, drive collaborative projects that deliver impact, help grow the research capacity of the Institute, and contribute to the Institute's network of universities, industry partners, third sector organisations and government. They contribute to the activities and training at the core of the Institute's mission and the ongoing development of the next generation of researchers. They uphold and support the [Turing Values](#).

Turing Fellowships will be offered on an unfunded basis for 12 months in the first instance, starting from 1 October 2021 up until 30 September 2022.

## Remit of the Turing Fellowships

We are particularly interested in applications which demonstrate how an applicant will contribute to the strategic goals of the Institute. We recommend your application addresses at least one of the following areas:

- How your research is relevant and could contribute to our priority research areas.
- How your research is relevant and could contribute to our methodological problem areas.
- How you and/or your research could contribute to our work on the national skills agenda.
- How you and/or your research could contribute to our public engagement work.

Appendix 1 provides further information and expands on each of the areas above.

## **Turing Fellowship Benefits**

Being a national institute enables us to deliver benefits that a single university could not deliver alone. We break down disciplinary boundaries; at the Turing, computer scientists, engineers, statisticians, mathematicians, and scientists work together under one shared goal, with no departmental boundaries. Inter-disciplinary working is supported through our events programme, special interest groups and competitive funding bids as well as the support of our in-house research software engineering team and significant computing resource.

In addition, Turing Fellowships can provide a variety of benefits to the individual, including:

- Recognised association and title from the UK's established national data science and AI institute.
- Membership of an interdisciplinary data science and AI research community, including established researchers at other Turing university partners. Enhanced opportunities to find collaborators, showcase personal research and work with unique data sets and novel tools and techniques.
- Opportunities to engage with and develop collaborations with partners from industry, government and the third sector.
- Access to a physical collaborative working and meeting space in central London with no disciplinary boundaries (dependent on government regulations and lockdown measures).
- Travel and expenses allowance for travel to the Institute in London and to other Turing university partners (for Turing-related activity).
- Access to Turing research funding.
- Unique chance to set up, lead and participate in themed and multidisciplinary Turing Special Interest Groups.
- Benefit from and participate in the Turing's programme of events and expanded virtual engagement programme. Fellows receive reduced rates and complimentary tickets for certain events.

## **Equality, Diversity and Inclusion**

The Alan Turing Institute has a mission to make great leaps in data science and artificial intelligence to change the world for the better and recognises that to make such great advancements and help solve the world's problems and challenges, we need to accurately reflect the world's diverse composition and build an inclusive community.

We are taking seriously questions of diversity, equity and inclusion as impact and importance to success and excellence in our field, community and mission. We are committed to actively working to embed and ensure our functions and research schemes are

accessible, inclusive, and diverse. The Institute encourages applications from all applicants and welcomes non-standard career paths and breaks spent outside academia.

## **Reasonable Adjustments**

We recognise that there may be individual circumstances that we need to be aware of. We aim to accommodate specific needs and personal circumstances but are reliant on applicants sharing this information with us at [academic-engagement@turing.ac.uk](mailto:academic-engagement@turing.ac.uk) or on +44 (0)20 3862 3521. There is also a section on the application form where applicants may make us aware of individual circumstances.

If there is information relevant to your application that we may need to consider when facilitating the review of your application, please contact us to discuss. This should be done early in the process or updated when circumstances change.

Further information relating to communicating your requirements can be found in the Frequently Asked Questions (FAQs).

We will treat any information you disclose to us as sensitive and will handle it in line with the Data Protection Act 2018. You can find out more information about how we handle your personal data in our Transparency notice. Information will only be used to arrange reasonable adjustments and will not be used to assess your application.

## **Eligibility Criteria**

To be eligible to apply to this call, applicants must:

- Be an experienced researcher with an independent research programme and evidence of significant contributions to your area of research.
- Hold a contract of employment with one of the 13 Turing university partners at the point of starting the Turing Fellowship. The contract must cover the full duration of the fellowship and/or may be permanent, open ended or long-term rolling.
- Be conducting research in the fields of data science, artificial intelligence or a related field.
- Have the support of their Head of Department, or equivalent, to become a Turing Fellow.

There are no set timeframes for applicant experience, and we encourage all applicants to review the assessment criteria to determine if they are eligible for this call. For further details on the level of experience required for a Turing Fellowship please also review our FAQs. The assessment criteria are listed within the Assessment Criteria section of this document.

The Alan Turing Institute reserves the right to reject applications without panel review that do not meet the remit and eligibility criteria of the Turing Fellow scheme.

## **Location and Host Organisation**

Turing Fellows will be based in the UK and be employed by a Turing university partner for the duration of the Fellowship. Turing Fellow activities can be carried out remotely and from the employing institution, with optional physical attendance at the Turing offices in London as and when required.

Applicants will be expected to secure the approval of their Head of Department at their employing university prior to submitting an application.

A university letter of support **will not be required** as part of the application process but applicants will be asked to declare that they have the full support of their institution's Head of Department within the application form (as a mandatory response).

## Funding and Resources

The fellowships within this call are offered on an unfunded basis. Fellows can claim reasonable travel and subsistence-related expenses as part of their fellowship (expenses policy will apply).

## Basic Terms and Conditions

Turing Fellows will be appointed for a period of 12 months, commencing on 1 October 2021.

The standard terms and conditions of the Turing Fellowships will be made available to Turing University Leads and University Liaison Managers at the partner universities in due course.

All Turing Fellows are required to complete a Turing Fellow Annual Report toward the end of their fellowship period.

## Application Process and Timeline

### Timeline

Stage	Process	Deadline/dates
<b>Stage 1: Application period</b>	Applications open	12 May 2021
	Applications close	23 June 2021 (23:59 BST)
	Eligibility checking	24-25 June 2021
<b>Stage 2: Assessment and selection</b>	Selection panels assess applications	From 28 June 2021
	Offers to successful applicants	Early-mid August 2021
<b>Stage 3: Onboarding</b>	Turing Fellow onboarding commences	1 September 2021
	Turing Fellowships commence	1 October 2021

## Application Process

### Stage 1: Applications

Applicants should apply through The Alan Turing Institute's Flexi-Grant application portal – accessible on the [Turing Fellow call webpage](#). Prior to starting an application, applicants may be required to create a Flexi-Grant account if they do not have one already.

Applicants may wish to review the FAQs prior to starting their application. Applications must be submitted on Flexi-Grant by **Wednesday 23 June 2021 23:59 BST**.

Applicants must obtain the support of their host organisation prior to applying and must declare this as a mandatory response within the application form.

The Institute will conduct an eligibility check of all received applications before progressing eligible applications to the review stage.

### Documentation Required

The Flexi-Grant application form requires applicants to upload a CV including publications relevant to this call. A full history of publications is not required. This document should meet the following specifications:

- PDF format.
- Maximum 2 sides of A4.
- Size 11 font.
- All margins of at least 2cm.

Your CV should outline your educational and employment history (and include details of any gaps in your career). Please also include details of relevant training and professional development activities undertaken as well as any prizes or awards, membership of any professional bodies and publications relevant to this call. You do not need to include contact details or details of referees.

You will also be asked to provide a Research Statement (maximum 1000 words) and a Statement of Interest (maximum 1000 words). In addition, you will be required to answer questions on your research achievements and approach to research. You may wish to prepare this separately and copy the text into the application form. The application form contains additional guidance on what to include in your statements and so we recommend reviewing this before preparing your answers.

### Stage 2: Panel review by Turing university partners

Eligible applications will be sent to the relevant university partner who will conduct the selection process and provide a final recommendation to the Turing of applicants to be appointed.

In addition to the university assessment, the Turing will undertake additional assessment of applicants and may offer additional Fellowships where applicants demonstrate a clear alignment to one of the Turing's research programmes.

Selection panels will consider the assessment criteria when assessing applications.

### Assessment Criteria

Applicants should consider the following assessment criteria when writing their application. Responses included within the application form will be assessed by the review panels on the following essential criteria:

Criterion	Essential/Desirable
1. Show evidence of commitment, passion and vision in data science, AI or a related field.	Essential
2. Demonstrate a significant contribution to the national and international research landscape across data science/AI disciplines and/or domains and show a strong awareness of the international context of their research.	Essential
3. Have a track record of outstanding research and in delivering impact.	Essential

4. Demonstrate commitment to creating and promoting a collegiate and collaborative approach to interdisciplinary research.	Essential
5. Show a desire to contribute to partnership working and an inclusive culture within the Turing's research community.	Essential
6. Evidence an outstanding approach to identifying future research directions in Data Science/AI.	Essential
7. Demonstrate the ability to develop, lead, support and maximise the potential in others.	Essential

### Contact Details

For further questions about the call, please contact the [Turing University Lead or University Liaison Manager](#) at your university. For specific questions about completing the application on the Flexi-Grant system, please contact [academic-engagement@turing.ac.uk](mailto:academic-engagement@turing.ac.uk).

## **Appendix 1: Supporting the strategic goals of the Institute**

Applicants are encouraged to address at least one of the following strategic goals of the Institute in their application.

1. The Institute's Priority Research Areas (section 1 below).
2. The Methodological Challenge Areas (section 2 below).
3. The Institute's work on the national skills agenda (section 3 below).
4. The Institute's public engagement work (section 4 below).

The Institute welcomes a range of suggested contributions towards these goals and all suggestions will be considered. Please note that suggesting a particular contribution or activity does not mean it will automatically occur. Turing Research Programme teams will contact successful Turing Fellows as appropriate.

## Section 1: Priority Research Areas

<b>Health and Medical Sciences</b>	<ul style="list-style-type: none"><li>• Optimise clinical trials for quicker deployment of novel treatments.</li><li>• Support earlier and more accurate detection, diagnosis and treatment of illness.</li><li>• Enhance the understanding of treatment heterogeneity and individualised response to treatment.</li><li>• Advance Privacy Enhancing Technologies for improved learning from health data assets.</li><li>• Ensure regulation enables deployment of legal, ethical and trusted AI systems into healthcare.</li></ul>
<b>Data-Centric Engineering</b>	<ul style="list-style-type: none"><li>• Support resilient and robust infrastructure to optimise maintenance and supply chains.</li><li>• Advance the monitoring of complex systems to anticipate high-consequence safety events.</li><li>• Advance data-driven design for sensing and autonomous operations</li><li>• Advance the robustness of statistical and machine learning methodology and theory (e.g. UQ, <math>\Phi</math>-ML, Prob. Num., StatFEM) for Digital Twins.</li></ul>
<b>Data Science for Science and Humanities</b>	<ul style="list-style-type: none"><li>• Support the fight against climate change through advanced modelling.</li><li>• Detecting and monitoring biodiversity.</li><li>• Support the creation and use of novel chemicals and materials.</li><li>• Enhance the understanding of complex molecular biology.</li><li>• Enable rare event detection to unlock new insights into the fundamentals of the Universe.</li><li>• Unlock the value of our cultural heritage.</li><li>• Revolutionise data-driven research in the arts, humanities, and social sciences.</li></ul>
<b>Defence and Security</b>	<ul style="list-style-type: none"><li>• Protect democracy and democratic institutions.</li><li>• Enhance the UK's cyber security capability.</li><li>• Augment the UK's position as a world-leader in Privacy Enhancing Technologies.</li><li>• Enable social justice and protection of human rights.</li><li>• Prepare for the security impact of climate change.</li></ul>
<b>Finance and Economic Data Science</b>	<ul style="list-style-type: none"><li>• Develop methods that enable responsible adoption of data science and AI in the financial system.</li><li>• Advance machine learning and data science tools to enable monitoring of the economy in real-time, and to provide actionable intelligence for policymakers and industry.</li><li>• Advance research to support the alignment of the financial system with the goals of global sustainability.</li><li>• Advance research underpinning token economy and distributed financial system.</li></ul>
<b>Urban Analytics</b>	<ul style="list-style-type: none"><li>• Advance understanding of the drivers of behaviour and social change.</li></ul>

## Section 1: Priority Research Areas

- Support place-based policy agendas to promote social inclusion, prosperity and well-being in cities.
- Advance spatial analysis, spatial data infrastructure and visualisation for urban and regional research.
- Develop data science and AI learning methods in the context of mobility, active lifestyles, urban environments and population health.

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### Public Policy

- Advance research into identifying policy priorities and evaluating policy impact to help policy-makers make better decisions. Agent computing for policy is a priority area here.
- Improve the provision of public services to ensure that vulnerable people receive help more effectively and efficiently. Predictive models for service delivery is an area we are keen to develop.
- Set the ethical standards for the use of data science and AI in policy-making to guarantee that their impact is beneficial and equitable.
- Drive regulatory innovation by proposing smart and responsible regulation to clarify the acceptable uses of these powerful technologies. Online harms is a priority area here.

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### Tools, Practices and Systems

- Promote the maintenance and sustainability of the open-source ecosystem to accelerate innovation.
- Establish and implement best practices for reproducible and reusable workflows, including software testing or data standards.
- Unlock innovation by optimising high-performance computing and secure data access for data science and AI applications.
- Innovate and establish training resources, approaches, and communities to promote democratised access and improve cross-sector inclusion in data science and AI.

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### Artificial Intelligence

- Advance methods to increase AI transparency and explainability.
- Improve fairness of algorithmic systems, including ways to measure and mitigate bias.
- Development of robust systems which adapt well to new environments, secure from attack and respecting privacy.
- Development of systems that enable effective human control and prevent inappropriate influence on us.
- Address the challenges arising from the deployment of smart, connected technology, including robotics and autonomous systems.
- Effective human-machine interaction to enable deployment of algorithmic systems that complement humans so that they work well together to achieve goals effectively.

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### Data Science at Scale

- Dramatically increase the scalability of important data-driven computing tasks by designing/implementing algorithms that exploit the characteristics of modern computing systems.
- Develop and improve software infrastructure that improves accessibility or efficiency of high-performance or cloud computing systems, in the context of data science and AI applications.
- Support hardware development designed to suit the needs of computationally demanding data science and AI algorithms.

## Section 2: Methodological Challenge Areas

13 methodological challenge areas were identified to be a way to articulate the core, common science problems across data science and AI.

<b>Automating data wrangling</b>	Finding ways to automate the lengthy process spent preparing data for analysis.
<b>Building in good behaviour</b>	Preventing misuse of data-driven technologies and AI.
<b>Causation</b>	Using and analysing data in order to confidently infer causal relationships.
<b>Democratising data science</b>	Empowering citizens to access, understand and exploit the world's data.
<b>Deriving value from increasing data availability</b>	Improving the ways in which we collect and analyse data.
<b>Design and development of data visualisations</b>	Effectively and efficiently convey information to varying audiences.
<b>Finding structure in data</b>	Discover and disentangle the hidden factors underlying observed data.
<b>Data Fusion</b>	Merging multiple sources of data.
<b>Identity and anonymity</b>	Using data while protecting privacy.
<b>Incorporating human expertise</b>	Merging human knowledge with data-driven machine learning and AI systems.
<b>Robustness and verification of systems</b>	Eradicating failures within interacting systems.
<b>Scalability</b>	Optimising algorithmic and system performance for bigger and more complex datasets.
<b>Theoretical foundations</b>	Understanding and building on the most effective methods across data science and AI to produce the next generation of techniques.

## Section 3: Contributions to the Institute's work on the National Skills Agenda

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### **National Skills Agenda**

- Contribute to the activity of the Training Steering Group. This includes sharing expertise of running data science/AI training programmes at universities and considering how this can aid the development of the Institute's skills agenda. This is particularly relevant when considering learners with non-traditional backgrounds/promoting interdisciplinary research.
  - Support the development of adoption of evidence-based practice in data science training nationally.
  - Contribute directly to the Institute's flagship training programmes and development of academic resources.
  - Contribute to guidance on managing career transitions for data scientists between academic/industry/other sectors.
  - Contribute expertise in specific areas to support call reviews for the Institute's programmes and initiatives, especially in areas where we seek to increase the diversity of applicants and target underrepresented groups.
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## Section 4: Contributions to the Institute's public engagement work

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- Public engagement**
- Appear in or help to shape events or public engagement activities run by the Institute.
  - Liaise with the Turing on representing your research interest or broader sector-wide themes of mutual interest, for example EDI, for our range of audiences.
  - Participate in outreach undertaken by the Turing in our communications and engagement work, for example through taking part in media briefings, social media Q&As, spotlight features.
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