

# The Alan Turing Institute

## Turing Network Development Awards Call 2021

### Call Document

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## Summary

The Alan Turing Institute is the UK's national institute for data science and artificial intelligence (AI). The Institute's mission is to advance research in data science and AI to change the world for the better.

By convening the data science and AI community, the Institute currently has three goals:

- **Advance world-class research and apply it to real-world problems:** innovate and develop world-class research in data science and AI that supports next-generation theoretical developments and is applied to real-world problems, generating the creation of new businesses, services, and jobs.
- **Train the leaders of the future:** train new generations of data science and AI leaders with the necessary breadth and depth of technical and ethical skills to match the UK's growing industrial and societal needs.
- **Lead the public conversation:** through agenda-setting research, public engagement, and expert technical advice, drive new and innovative ideas which have a significant influence on industry, government, regulation or societal views, or which have an impact on how data science and AI research is undertaken.

Our future vision includes working with more universities and researchers from across the UK to drive research in the data sciences and AI technologies and their safe and responsible translation to effectively deliver greater impact. As a step towards this we are piloting the Turing Network Development Awards, with the aim of:

- Growing the data science and AI research and innovation community across UK universities.
- Raising awareness of the Institute, its opportunities and initiatives within UK universities.
- Identifying and exploring complementary areas that could form the foundation of future collaborations, strategic alliances or partnerships.
- Supporting knowledge exchange across the network to maximise research and innovation.
- Informing the future development of the Institute's networks.

Awards of up to £25,000 will be made to UK universities<sup>1</sup> that demonstrate expertise, excellence and ambitions that are aligned with enhancing delivery of innovation alongside one or more of the Institute's research priority areas (see Appendix 1) to undertake activities to help deliver these aims. Applications should be submitted on behalf of a university and the Award will be supported by an Award Lead (further information below). Up to 20 Awards are available as part of this call.

## Key information

- Call opens for applications via Flexi-Grant portal on 2 November 2021.
- Application period remains open until 17:00 on 9 December 2021.
- Activity funded by this Award will begin from 1 February 2022.
- Successful universities are required to appoint an Award Lead.
- Award Leads will obtain access to the Institute until 30 September 2022.

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<sup>1</sup> The Institute is keen to work with a wide range of universities, and given the limited number of awards available, university partners will not be eligible to apply for this award and should instead consider making a request for Turing Collaboration Funding

- Universities are welcome to contact the Institute's Chief Scientist, Professor Mark Girolami, to discuss their application in advance of submission. Please email [ChiefScientist@turing.ac.uk](mailto:ChiefScientist@turing.ac.uk). There will also be an opportunity for all successful universities to meet with the Institute's Chief Scientist on commencement of and during the Award.
- For general queries, please contact [academic-engagement@turing.ac.uk](mailto:academic-engagement@turing.ac.uk)

## Background

In the six short years since it was set up, the Institute has added significant value to the UK research and innovation landscape, acting as an independent and impartial linchpin for the UK's data science and AI sector. It has built an international reputation as a vibrant hub for UK data science and AI, delivering interdisciplinary research excellence and crucially starting to build on innovation delivery, as well as fostering new paradigms in training. The Institute is recognised both as the front door for identifying data science and AI expertise, and for its ability to underpin collaborative research activity by leveraging academic, industry, third sector and public sector partnerships.

As the Institute works to scope its vision for the future and secure long-term sustainable funding, it recognises that advances in data science and AI do not stand still. Thus, it needs to build on its successes, including those as a broker and convenor, and to achieve its goals, it needs to extend its reach; the Turing Network Development Award for UK universities will support this. Through this Award, universities can establish or grow their community and connect to the Institute and the opportunities that it offers. For example, its interdisciplinary data science and AI research community, the potential to connect and engage with Institute partners from industry, government and the third sector, and possible participation in many of our activities open to researchers across the UK, such as Interest Groups, Data Study Groups, the Enrichment scheme for PhD students, and the Theory and Method Challenge Fortnights.

## Purpose of the Award

This funding opportunity is designed for universities to:

1. Start to establish or grow an engaged and diverse community working (at all career stages) in data science and AI research and innovation at the university, who are aware of and engage in the potential opportunities and initiatives available across the Turing network.
2. Identify and establish links between Institute priority areas and areas of interest and expertise at the university, with initial dialogue around contribution and collaboration taking place. The Institute's priority research areas are listed in Appendix 1 at the end of this document.
3. Host activities / initiatives that are open to the wider data science and AI research and innovation community and/or local and regional communities, with a view to forming new links and collaborations.
4. Map the university's expertise / strengths in each of the Institute's priority areas and those considered of national strategic importance (in data science and AI) not yet covered by the Institute.
5. Design plans for how the network will become sustainable for the future.

In addition to the Award funding available, universities, through the Award Lead (see 'Role of the Award Lead' below), will have access to the Institute, and innovative proposals which fully utilise the opportunity of engaging with the Institute are strongly encouraged. Applicants should visit Turing the website for information on how to engage. Note that Award recipients will also have the opportunity to nominate a speaker or demonstrator to participate in the Institute's flagship annual conference [AI UK](#).

Given that this is a development award and by nature short-term, the Institute will prioritise applications that demonstrate a clear commitment to supporting this network in the future and a desire to work with the Institute as its vision for the future evolves.

## **Role of the Award Lead**

Successful universities will be required to nominate an 'Award Lead'. Award Leads will oversee successful delivery of the Award, and all activity committed by the university in the application. They will benefit from access to the UK's established national data science and AI institute and its interdisciplinary data science and AI research community.

Award Leads will support all activity between 1 February – 30 September 2022 and, to maximise the value of the Award, are encouraged to attend events at the Institute in London, or at Turing university partners from time to time. They will maintain regular communication with various Institute teams including, but not limited to, the Academic Engagement team, Programme Management Unit, Events and Engagement team, Strategy team and Office of the Chief Scientist. They will also lead on any relevant reporting required as part of this Award – see the separate FAQ document for further information.

The Institute will require the name of the Award Lead and a short-form (two pages maximum) CV from the university by 31 January 2022.

The Award Lead must meet the following criteria:

- Be an experienced, mid-career / senior researcher with an independent programme of research and innovation and evidence of significant contributions to their area of research and its successful translation to demonstrable impact.
- Be conducting research in the fields of data science, AI or a related field.
- Hold a contract of employment with the university making the application for the duration of the Award. This may be permanent, open-ended or a long-term rolling contract.
- Have the support of their Head of Department, or equivalent, to accept the position of the Award Lead.
- Be available to attend an Award Lead induction event in early February 2022.
- Agree to and sign terms and conditions to access the Institute and successfully complete a mandatory security check as required by our landlords, the British Library.

The Institute reserves the right to request an alternative Award Lead if it concludes that the nominated lead does not meet the criteria above.

## **Equality, Diversity and Inclusion**

The Institute's mission is to make great leaps in data science and AI to change the world for the better, and we recognise 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. The Institute takes very seriously questions of diversity, equity and inclusion as impact and importance to success and excellence in our field, community and mission. The Institute is committed to actively working to embed and ensure the Institute's functions and research schemes are accessible, inclusive and diverse. Further information on the Institute's EDI work is available [here](#).

## Reasonable adjustments

The Institute recognises there may be individual circumstances that colleagues at the Institute need to be aware of. The Institute aims to accommodate specific needs and personal circumstances but are reliant on applicants sharing this information with the Institute at [academic-engagement@turing.ac.uk](mailto:academic-engagement@turing.ac.uk) or on +44 (0) 20 38 62 33 33. If there is information relevant to your application that the Institute may need to consider when facilitating the review of your application, please contact us using the details above to discuss. This should be done early in the process, or updated when circumstances change. We will treat any information you disclose to the Institute as sensitive and will handle it in line with the Data Protection Act 2018. You can find out more information about how the Institute handles your personal data in our [privacy notice](#). Information will only be used to arrange reasonable adjustments and will not be used to assess your application.

Award Leads will have the opportunity to share any information regarding their individual circumstances and reasonable adjustments via an onboarding survey in January 2022. The Academic Engagement team is happy to discuss personal circumstances with Award Leads in advance via [academic-engagement@turing.ac.uk](mailto:academic-engagement@turing.ac.uk).

## Eligibility for the Award

The call is open to UK universities<sup>2</sup> with proven research excellence and a track record of translation in data science, AI or a related field, whose research and innovation would be significantly enhanced through active involvement with the Institute's network.

Only one application can be submitted per university. Incomplete applications will not be considered.

The Institute reserves the right to reject applications that do not demonstrate the remit and eligibility criteria of the Turing Network Development Awards.

## Funding and resources

Awards will be granted up to a maximum of £25,000 to cover the Award Lead and professional services, as well as other activity, such as events and workshops, to enable successful delivery. Further information about what costs are within the scope of this award are included in the costing template and FAQs document.

All costings need to be provided in the costing template, available on the [application page of the website](#). A completed template is a required upload as part of the application.

## Terms and conditions

The standard terms and conditions for this category of funding are [available here](#). Given the nature of the award there will be variations that will be shared with successful applicants in the award letter in due course.

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<sup>2</sup> The Institute is keen to work with a wide range of universities, and given the limited number of awards available, university partners will not be eligible to apply for this award and should instead consider making a request for Turing Collaboration Funding

## Application process and timeline

### Timeline

	Process	Deadline/dates
<b>Stage 1</b> <b>Application period</b>	Applications open	2 November 2021
	Applications close	9 December 2021 at 17:00
<b>Stage 2</b> <b>Assessment and selection</b>	Selection Panel takes place	17 December 2021
	Offers to successful applicants	w/c 20 December 2021
<b>Stage 3</b> <b>Onboarding and induction</b>	Terms and conditions agreed and signed	By 31 January 2022
	Award commences	1 February 2022
	Induction of Award Lead begins	February 2022

Applicants should apply through the Institute’s Flexi-Grant application portal – accessible on the Turing Network Development Awards [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 17:00 on 9 December 2021.

Applications must include a letter confirming institutional support from the Pro-vice chancellor (Research) or equivalent, a data science and/or AI institute/centre lead, or a suitable senior university representative.

Applicants will be asked to provide information about how they meet each of the selection criteria listed below. You may wish to prepare this separately and copy the text into the application form when you are ready to submit. The application form contains additional guidance on what to include, and also lists word limits, so it is recommended that you review this before preparing your answers.

### Assessment criteria

Eligible applications will be reviewed by a selection panel consisting of members of the Institute’s leadership team.

Responses included as part of each application form will be assessed by the review panel against the criteria, and these should be considered when writing an application. All criteria are essential. The review panel’s decision is final and cannot be appealed. Feedback will be given on request.

For criterion 1, information about the Institute’s current priority research areas is included in Appendix 1 at the end of this document.

Criterion	Weighting
1. Alignment with and commitment to the Institute’s strategic goals, and research and innovation priority areas, including methodological challenge areas, and/or areas considered of strategic, national importance <sup>3</sup>	10%
2. Demonstration of research and innovation expertise and excellence in the fields of data science, AI or related fields	10%
3. Proposal fit to purpose of the Award (see page 3)	60%

<sup>3</sup> [National AI Strategy - HTML version - GOV.UK \(www.gov.uk\)](#)

4. Demonstration of how Equality, Diversity and Inclusion will be embedded across all activities described in the proposal	10%
5. Resources: how far the proposal maximises the impact and benefits achieved from the resources requested, and the likelihood that it will succeed in reaching its goals	10%

## Contact details

For any questions about the Award or completing the application on the Flexi-Grant system, please contact us via [academic-engagement@turing.ac.uk](mailto:academic-engagement@turing.ac.uk) or +44 (0)20 3862 3333.

## Appendix 1: Priority Research Areas and Innovation

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<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>• Detect and monitor 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 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 policy makers 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 systems</li></ul>

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## Urban Analytics

- Advance understanding of the drivers of behaviour and social change
- 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, AI and/or machine learning in the context of mobility, active lifestyles, urban environments and population health
- Use modelling, simulation and data analytics in the development of urban digital twins

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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
- Develop robust systems which adapt well to new environments, secure from attack and respecting privacy
- Develop 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

Further information about the Institute’s research programmes can be found here: [Research | The Alan Turing Institute](#)

**Innovation:** The Alan Turing Institute will be the UK science and innovation powerhouse working in partnership with others to drive the creation and application of new research knowledge in the Data Sciences and Artificial Intelligence Technologies. Through this newly generated knowledge we will innovate to create value for society and provide drivers for ethical business success, which will ultimately improve the world, creating safer, healthier, more secure and prosperous global societies and economies.

## Appendix 2: Methodological Challenge Areas

13 methodological challenge areas were identified as a way of articulating the core, common science problems across data science and AI.

<b>Automating data wrangling</b>	Finding ways to automate the lengthy process of 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>	Discovering and disentangling 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

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**Robustness and verification of systems**

Eradicating failures within interacting systems

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**Scalability**

Optimising algorithmic and system performance for bigger and more complex datasets

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**Theoretical foundations**

Understanding and building on the most effective methods across data science and AI to produce the next generation of techniques

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