The Alan Turing Institute

CO-DIRECTORS (x3), TURING RESEARCH AND INNOVATION CLUSTER IN DIGITAL TWINS

THE ALAN TURING INSTITUTE

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

A digital twin (DT) is a virtual replica of a physical process or system that is dynamically updated using data collected from real-time monitoring of its physical counterpart. Although they originated in the engineering sciences, DTs are starting to be used to successfully approach a wide range of complex scientific and social problems, including in healthcare, environmental monitoring, urban analytics, and economics.

Digital Twins are a strategic priority for the Institute and area of research and innovation strength. Through ongoing work within the Data-Centric Engineering, Urban Analytics and AI for Science and Government (ASG) Programmes, and the Environment and Sustainability interest group, The Alan Turing Institute has established one of the largest impactful portfolios of Digital Twin research and innovation in the UK – in areas from aerospace and civil engineering to urban modelling and agricultural and environmental monitoring – supported by a total investment of more than £26M.

Building on this momentum, and supported by a further £6M investment, the Alan Turing Institute is establishing a new Turing Research and Innovation Cluster in Digital Twins (TRIC-DT) to support research and innovation at the interface of AI and DT technologies, ensuring UK leadership in these technologies. This cluster will work closely with partner organizations and coordinate activity with other national DT initiatives to extend the Institute's substantial DT research and innovation activity, and will explicitly focus on solving significant societal challenges and generating tangible societal benefits in three interrelated areas:

1. Environment and sustainability: predicting and mitigating the negative impacts of climate change
2. Infrastructure: enhancing the efficiency and resilience of critical infrastructure (e.g., energy)
3. Health: improving human health and wellbeing

These focus areas will provide a set of defined case study projects on which to anchor the development of interoperable software and open science tools that will help move DTs from a powerful yet bespoke technology to a more easily adoptable industrial technology. The TRIC-DT will be governed by principles of open and reproducible research and effective innovation.

This vision will be achieved by establishing knowledge exchange between a central Turing Impact Hub, and a network of collaborators across the academic, government and private sectors. The Impact Hub will support a team of funded postdoctoral research fellows, dedicated DT software engineers, research application managers, community managers and ethics advisors.

ROLE PURPOSE

We are recruiting a leadership team of individuals with exceptional track-record, expertise and ambition to collaboratively lead the TRIC-DT, including establishing it and developing and implementing its vision. Each member of the leadership team will become a co-Director of the TRIC-DT and will be awarded a funded Fellowship to support their research activities. Candidates will be expected to bring demonstrated significant expertise with extensive academic and industry

connections (as appropriate) and will be provided with a substantial budget to support the development of their collective vision. The success of the TRIC-DT will depend on strong, dynamic leadership and co-Directors will accordingly be required to commit 0.8 FTE to this initiative (via a blend of secondment and generously funded Fellowship that will provide funds to enable them to further research and innovate in their area, in alignment with the aims of the TRIC-DT. See details in Terms and Conditions).

Each co-Director will bring substantial expertise in one of the three TRIC-DT challenge areas (environment, infrastructure, health). They will be expected to have a substantial research and innovation portfolio in their area, evidenced by national leadership positions, established partnerships, substantial prior research funding and access to significant data assets. The leadership team will be expected to work collaboratively to develop and deliver a coordinated, ambitious, and compelling vision for the TRIC-DT, in partnership with senior Turing Institute colleagues and Institute partners, including the UK Government, industrial and university partners, and third sector organisations. The co-Directors will report directly to the Turing Institute's Chief Scientist, Professor Mark Girolami.

This is a stand-out opportunity to join the leadership of a prestigious, national research institute and shape its agenda in a critical area at an important and exciting time in its development. Membership of the TRIC-DT leadership team will embed participating individuals and their home organizations at the heart of an ambitious national research and innovation initiative and allow them to co-design and co-develop the software tools that will determine the trajectory of future of DT research and innovation.

Candidates should have an extensive record of accomplishment in the theory and practice of digital twin research, including working effectively with stakeholders, and be ambitious: enthusiasm to take on the most challenging problems of greatest societal importance is essential. Candidates must have substantial experience of managing complex projects or programmes and delivering substantial real-world impact.

For further information please visit this website.

Informal enquires can be made to digitaltwins@turing.ac.uk in the first instance.

DUTIES AND AREAS OF RESPONSIBILITY

- To work closely with the Turing leadership, under the scientific leadership of Professor Mark Girolami, to establish, develop, and implement the vision for the TRIC-DT, including defining challenge problems in the areas of environment, infrastructure, and health, and designing and implementing a strategy to tackle these challenges
- Conduct an ambitious programme of digital twin (DT) research and innovation, generating first class research outputs, aligned with the aims and objectives of the Institute and maximising opportunities for translation and exploitation of DT technologies
- Develop relationships with a variety of stakeholders to ensure that scientific advances in DT research are translated into real-world benefits
- Build capabilities in DT research and innovation across a range of application areas, drawing upon the multidisciplinary nature of the Alan Turing Institute
- Take a proactive leadership role in the UK's DT research and innovation community (e.g., by writing agenda setting articles and delivering keynote addresses)
- Secure substantial funding for collaborative DT research and innovation from appropriate sponsors (e.g., research councils, government, industry, EU, charities, etc.)
- Disseminate findings at industry, academic and practitioner conferences and meetings
- Oversee a substantial budget, including making decisions on appropriate use of funds, in accordance with Turing processes and guidance
- Actively contribute to the skills and career development for the Turing's community of early career post-doctoral researchers
- Line manage team members and carry out performance appraisals, as appropriate.

OTHER DUTIES

- Assist the wider Turing leadership team in developing the Institute's strategy, as appropriate
- Contribute to the academic life of the Institute (e.g., by leading seminars, workshops, etc.)
- Liaise with the Institute's Programmes and the business team to ensure that the TRIC-DT is integrated with wider Institute activities and strategy.

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 Post holders will be expected to demonstrate the following:	**Essential (E)** **Desirable (D)**	**Tested at application (a)** **Tested at interview (i)**
Education/Qualification		
PhD or equivalent experience in Digital Twin methodologies, Artificial Intelligence, Computer Science, Mathematics, Data Science, or similar	E	A
Knowledge and Experience		
Experience of leading either a large research programme or substantial portfolio of work, ideally in a research environment, either academic, commercial, or third sector	E	A
Substantial experience of managing complex projects or programmes and delivering substantial real-world impact	E	A/I
International profile in digital twin research and innovation, with considerable experience of leading a research team and working with stakeholders to translate science into real-world benefit	E	A/I
An understanding of emerging data science and AI technologies	E	A/I
Ability to build and develop effective working relationships with external partner organisations (academia, commercial, public and third sectors), and working with a diverse set of stakeholders.	E	A/I
Experience working with internal stakeholders across multiple sectors and managing complex intersectoral relationships	E	A
Experience communicating complex outputs to a variety of audiences through several channels	E	A
Experience working with press, and/or media training	D	A
Experience delivering policy research to government or third sector stakeholders	D	A
Experience working in highly cross disciplinary projects	D	A
An existing UK Government security clearance is desirable, but not a requirement for this role	D	A
Communication		
Excellent communication (both oral and written), negotiation and influencing skills at all levels	E	A/I
Able to present complex, specialist information in an audience-appropriate format	E	A/I
Planning and Organising		
Experience of effectively managing budgets, setting performance standards and regularly monitoring and reviewing them	E	A
Initiative and Problem Solving		
Ability to use own initiative to resolve problems and identify the impact of resolving problems in the selected manner	E	I

Ability to make well-informed decisions with minimal risk in extraordinary circumstances, and consider the potential wider benefits	E	I
Analysis and Research		
Able to develop new ideas to explore and revolutionise existing knowledge	E	A/I
Team Development		
Experience coaching and mentoring others, developing team knowledge and improve team efficiency	E	A
Experience managing the performance of team members, including performance reviews and appraisals	E	A
Other Requirements		
Commitment to EDI principles and to the Organisation values	E	I
Commitment to meeting deadlines	E	I
Flexible attitude towards work	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.

As part of their application, candidates must also provide a short (maximum two-page) summary of their vision for the TRIC-DT, including details of partnerships and data and laboratory assets that they will bring and how they plan to use their Fellowship (see details in Terms and Conditions). Candidates should bear in mind the multi-disciplinary vision of the TRIC-DT, and clearly articulate how they will work across themes. Candidates invited to interview will be asked to present their vision to senior members of the Turing leadership.

If you have questions about the role or would like to apply using a different format, please contact us on 020 3862 3565, or email recruitment@turing.ac.uk.

CLOSING DATE FOR APPLICATIONS: Wednesday 20 July 2022 at 23:59

TERMS AND CONDITIONS

Each co-director will be seconded to the Alan Turing Institute at 0.5 FTE for a period of 3 years. This role sits within band 7 in the Turing's salary structure (£80,000 - £95,000). Individuals who are earning a salary higher than band 7 will be compensated through the secondment at their current rate.

Additionally, each co-Director will be provided with a Fellowship package equivalent to 0.3 FTE of their salary and additional programme funding to enable them to further research and innovate in their area, in alignment with the aims of the TRIC-DT. There is some discretion in the use of these funds, in consultation with the Turing leadership, but a typical model for this package would be funding for two TRIC-DT postdoctoral research fellows (PDRAs) and one research software engineer as well as associated costs (travel, conferences, research costs, etc.) for three years

It is expected that successful applicants will be affiliated with a UK-based institution and will retain affiliation with their home institution. Any offer will be contingent upon agreement of a proposed arrangement by the applicant's home institution.

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 building a diverse community and would like our leadership teal to reflect this. We therefore welcome applications from the broadest spectrum of backgrounds.

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***.***