The Alan Turing Institute

Partner Scientist, AI for Physical Systems

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 purpose is to make great leaps in data science and AI research to change the world for the better. Its goals are to advance world-class research and apply it to national and global challenges, build skills for the future by contributing to training people across sectors and career stages, and drive an informed public conversation by providing balanced and evidence-based views on data science and AI.

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 300 researchers, a rapidly growing team of in-house research software engineers and data scientists and a business team.

BACKGROUND

The Alan Turing Institute focuses on world-class science and innovation, generating internationally leading research and translating it into real-world impact and deployment. The Institute is developing research in key strategic mission areas in Environment, Sustainability, Defence & National Security, and Fundamental Research in AI.

We are looking for a Partner Scientist to join the Fundamental Research team to lead the development and deployment of cutting-edge AI techniques, centred around our mission to develop AI for Physical Systems. We are developing foundational theory, methods and tools to advance the state-of-the-art of the use of AI to model, predict and control physical systems. We work closely with the Science and Innovation priorities to operationalise the technologies developed to create substantial real-world impact.

ROLE PURPOSE

The primary purpose of the role is to lead and conduct internationally leading research, and the postholder will be part of the Institute's Fundamental Research team. The Partner Scientist will lead a collaborative, multidisciplinary team of researchers and research engineers, and will be expected to engage with internal and external stakeholders and collaborators to support delivery of an ambitious research programme.

The Partner Scientist will work across the Turing's Science and Innovation portfolio, including Defence and National Security, Environmental Forecasting, Sustainability, Fundamental Research and Strategic Capabilities, to embed and align the AI for Physical Systems mission. We are seeking a visionary research lead to direct a high-priority research portfolio at the cutting edge of AI for Physical Systems. You will shape and oversee work spanning probabilistic modelling and uncertainty quantification, efficient architectures and embedding physical knowledge into ML models, taking these methods from foundational research through to trusted deployment on real-world resilience challenges. This is an opportunity to shape a national priority at a transformative moment for the field.

We are seeking a leader with an outstanding track record in AI for Physical Systems and a passion for multidisciplinary, impact-driven collaboration. Reporting to the Mission Director for Fundamental Research, the postholder will provide strategic leadership and line management for researchers and engineers. This is a standout opportunity to define the future of national research within a world-leading institute.

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HOW YOU WILL MAKE AN IMPACT

- **Set the scientific direction of the theme.** Define, maintain and periodically refresh an ambitious AI for Physical Systems research agenda aligned with Fundamental Research priorities and the Transformational Resilience Goals, drawing on the relevant thematic remit.
- **Build and lead a coherent research portfolio.** Originate, shape and oversee programmes from foundational research questions through to demonstrators or deployment, with clear outcomes, milestones and standards of scientific rigour.
- **Recruit, develop and redirect capability.** Build, lead and mentor a multidisciplinary group of researchers and research engineers, and redirect its expertise as the Institute's portfolio, partnerships and national priorities evolve.
- **Provide hands-on scientific leadership.** Remain active in the research, working alongside technical teams and partners to resolve difficult methodological challenges, review scientific quality and model excellent research practice.
- **Translate research into resilience impact.** Apply AI for Physical Systems methods to real operational problems, data and constraints, including secure, classified or otherwise sensitive environments where required.
- **Develop partnerships and secure resources.** Establish productive collaborations across the Institute, academia, government and industry, and help secure the funding, data, compute, facilities and partner commitments needed to deliver the portfolio.
- **Represent and assure the theme.** Act as the Institute's senior scientific authority for AI for Physical Systems before partners, boards and research audiences; communicate evidence clearly; monitor emerging developments.

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)**
Knowledge and Experience		
A PhD (or equivalent experience) in a relevant field such as machine learning, AI, computer science, mathematics, statistics, physics or engineering, and an outstanding, sustained record of research contributions that have shaped the field, evidenced for example by high-impact publications or widely used software or models.	E	A
Demonstrable leadership in setting and delivering strategic research direction through to real-world impact, including leading complex, multi-partner collaborations with external organisations (e.g. academia, industry, government) and building relationships that have shaped shared research agendas.	E	A&I
A strong track record of securing significant external funding as lead or co-lead (e.g. from research councils, government, industry or philanthropic sources), and of shaping funding proposals that align partner and organisational priorities.	E	A
Exceptional communication and influencing skills, with experience of representing an organisation externally and engaging senior stakeholders (e.g. funders, government, industry leaders) to shape decisions, alongside the ability to convey complex technical work clearly to both specialist and non-specialist audiences.	E	I
Sound strategic judgement, with the ability to anticipate technical, ethical and organisational risks and opportunities, synthesise complex evidence, and provide clear, well-reasoned advice that informs institutional priorities and future plans.	E	I
An internationally recognised track record in machine learning for physical systems, with deep, hands-on expertise spanning several of the following: probabilistic and generative modelling (e.g., flow matching, denoising diffusion models), neural operators, surrogate modelling, embedding physical knowledge in ML models (e.g., through inductive biases or physics-informed training), uncertainty quantification for ML models, the application of ML modelling to physical systems (e.g., engineering applications, climate modelling).	E	A&I
A proven track record of designing and leading the development of research software and infrastructure at scale (e.g. large-scale model training or evaluation systems), including setting technical direction, making key architectural decisions, and remaining hands-on with code. Contributions to widely adopted open-source tools or frameworks are highly desirable.	E	A&I
Experience developing or deploying AI systems in secure, regulated or sensitive environments (e.g. defence, government, critical infrastructure), including considerations of data provenance, compliance and model security.	E	A&I
A commitment to responsible and open research practice, including attention to safety, transparency, reproducibility and the societal implications of AI systems.	D	A&I
Evidence of leadership in the wider research community, such as senior roles on programme committees, editorial boards, advisory panels or standards and policy bodies.	D	A
A strong record of mentoring and developing researchers and engineers at all career stages, including senior colleagues, and of building technical capability and a collaborative, high-standards culture within and beyond their own team.	D	A&I
Other requirements		
Commitment to EDI principles and to the Organisation values	E	I

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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 at recruitment@turing.ac.uk.

TERMS AND CONDITIONS

This full-time post is offered on a permanent basis. The annual salary range is £96,000 - £115,000 plus excellent benefits, including flexible working and family friendly policies - Click here for more details.

Applications on a secondment basis (0.8 FTE) can also be considered. The annual salary will be matched and pro-rated to the FTE commitment. The secondment will be subject to agreement between the Turing and the relevant organisation.

EQUALITY, DIVERSITY AND INCLUSION

The Alan Turing Institute is committed to creating an environment where diversity is valued and everyone is treated fairly. We value diversity of background, experience, and perspective, and are proud to be an inclusive employer. We warmly encourage applications from all backgrounds, particularly from groups currently under-represented in our sector. If you feel passionate about this role but don't meet every single requirement, please apply — we recognise that great candidates may bring strengths beyond the criteria listed.

We are committed to making sure our recruitment process is accessible and inclusive. This includes making reasonable adjustments for candidates who have a disability or long-term condition. Please contact us at recruitment@turing.ac.uk to find out how we can assist you.

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***.***

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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.

