

The Alan Turing Institute

Senior Research Advisor – AI Methods within NHS Accelerated Access

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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 Turing Health and Medical Science Programme has long-term interests in research study design and evaluation methodology for AI-driven healthcare solutions. It is seeking contribute to the development of standards for how to evaluate AI in clinical studies within the NHS and internationally. Following an recent NHS AI Award to Kheiron Medical Technologies, a specific novel opportunity has arisen for a two-year research programme that will specifically focus on optimising such standards for the breast cancer screening domain as part of a new Kheiron-Turing collaboration.

Further information about the award:

Four phases of award are available to support AI solutions from initial feasibility to evaluation within NHS and social care settings. The award is a competitive process run by the [Accelerated Access Collaborative](#) (AAC) as part of the [NHS AI Lab](#), in partnership with NHSX and the [National Institute for Health Research \(NIHR\)](#). **Phase 4** is intended to identify AI technologies that need more evidence to merit large-scale commissioning or deployment. The AAC will work with NHS sites to support their adoption of these technologies, and stress test and evaluate them within routine clinical or operational pathways to determine their efficacy and accuracy, and clinical and economic impact.

ROLE PURPOSE

We are seeking a highly-experienced expert in one or more of the following areas: clinical trials study design, diagnostic tools evaluation and artificial intelligence, to develop novel methodologies and studies to assess the safety and efficacy of Mammography Intelligent Assessment (Mia), a novel AI breast screening solution, developed by Kheiron Medical on over 3 million images from different mammography modalities and different ethnic backgrounds.

Mia has recently been tested in a large-scale clinical trial in the UK and Europe with 283,000 cases (unseen and unenriched sample size). We are seeking to support the part-time secondment (approximately 0.2 FTE) of the expert to the Alan Turing Institute and the recruitment of a postdoctoral research fellow to support the expert in their work. An open call for this role will be published once this role is filled.

The successful candidate will join the partnership's leadership team and should be able to demonstrate prior evidence of experience engaging and successfully leading complex multi-stakeholder, cross-sector collaborative initiatives.

As part of the AI award, Kheiron will be conducting a series of studies, including large-scale retrospective trials, reader studies, prospective trials, and post-market surveillance This is amongst a series of recently commissioned large-scale studies of their AI deployed in a real-world national health system environment supported by the NHS. The project will also provide a framework to establish which combination of studies works best to evaluate the AI.

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The role holder will get the opportunity undertake frontier research and produce publications in the novel design of evaluation studies for AI models in real-world health systems; as well as, be part of the frontier national work involving NHS, Alan Turing Institute, NICE, PHE, AAC and NHS X teams on how to safely and effectively integrate new, cutting edge AI technology, and establish the UK as a leading global exemplar for large scale deployment of AI solutions.

The research team will benefit from the support of a Turing Research Project Manager from within its strategic Health and Medical Sciences Programme.

Example Research Questions

The project will address a number of emerging questions in the development of AI solutions for clinical application. These could include and not exclusively:

- Defining multiple and potentially competing endpoint criteria when assessing the performance of AI healthcare solutions,
- Addressing issues of missing not-at-random data or uncertainty in ground truth labels in the retrospective use of data for performance assessment,
- Developing novel methods suitable for population-level datasets or Bayesian alternatives to classical testing,
- Devising a process by which to demonstrate generalisability of AI solutions.

The postholder will have the opportunity to shape their own research programme to address these types of issues within the context of the Kheiron-Turing collaboration. They will be supported by at least one full-time postdoctoral researcher to support the expert in their work. This role will report to the Programme Director for Health and Medical Sciences.

DUTIES AND AREAS OF RESPONSIBILITY

- Develop novel methodologies and studies to assess the safety and efficacy of Mammography Intelligent Assessment (Mia),
- Lead the recruitment and manage the day-to-day activity of up to 2 Turing-based postdoctoral researchers for this project.
- Contribute to the partnership's leadership team, to include, but not limited to, advising on strategy, identifying opportunities for further collaboration and making decisions around resourcing of the project
- Undertake frontier research and in the novel design of evaluation studies for AI models in real-world health system
- Responsbile for producing publications regarding the output of this research

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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 | | |
| Doctorate in a highly-quantitative subject (including Mathematics, Statistics or Computer Science) | E | AI |
| Knowledge and Experience | | |
| Strong statistical background and experience in clinical trial study analysis and design. | E | AI |
| Prior experience in the evaluation of predictive models in a clinical setting | E | AI |
| Significant research experience in biostatistical or clinical research studies | E | AI |
| Prior leadership experience in the delivery of complex multi-partner projects. | E | AI |
| Experience in convening multi-stakeholder collaborations. | E | AI |
| Experience in effectively communicating complex scientific issues in multi-disciplinary research teams | E | AI |
| Experience in effectively conveying technical content to non-technical audience. | E | AI |
| Experience in regulatory processes involving software as medical devices | D | AI |
| Familiarity and experience working with modern artificial intelligence technologies | D | AI |
| Demonstrate ability to act as an ambassador for the development and implementation of new AI regulatory evaluation processes. | D | AI |
| Analysis and Research | | |
| Develop new hypotheses and concepts for testing to expand or extend existing body of knowledge. | E | I |
| Challenge the status quo and provide mechanisms and approaches to explore new possibilities or explanations. | E | I |
| Planning and Organising | | |
| Manage the staffing and/or financial resources across the project dealing effectively with conflicting priorities between teams. | E | I |
| Sets performance standards and formulate action/business plans, monitoring and reviewing progress regularly. | E | I |

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| | | |
|--|---|----|
| Develop and implement long term strategic plans typically 3-5 years that are aligned to organisational strategy or contributing to regional level planning outside of the organisation. Anticipates changes in demand or factors that may impact on success, developing contingency plans as required. | E | I |
| Ability to plan and organise work to meet externally driven project milestones | E | I |
| Service Delivery | | |
| Actively promotes and defines performance standards for the service area that support the achievement of organisational objectives. | E | I |
| Undertakes regular monitoring and review to ensure that standards are being met. Is aware of and deals with internal and external factors that may impact on service levels. Ensures adequate resources are in place to support team managers in providing a quality service. | E | I |
| Teamwork and Motivation | | |
| Ability to lead and manage postdoctoral researchers for the project. | E | AI |
| Lead and direct a large project team with responsibility for developing and communicating action plans and objectives linked to organisational strategy and ensuring their implementation. | E | AI |
| Other Requirements | | |
| Commitment to meeting deadlines | E | I |
| Flexible attitude towards work | E | 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. 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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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 [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 020 3862 3575, or email recruitment@turing.ac.uk.

TERMS AND CONDITIONS

This part-time post (0.2 FTE) is offered on a fixed-term basis for two years. The full-time annual salary is £56,000-£60,000, pro-rata to part-time hours, plus excellent benefits, including flexible working and family friendly policies, <https://www.turing.ac.uk/work-turing/why-work-turing/employee-benefits>

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 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.