

The Alan Turing Institute

Principal Machine Learning Engineer – National Security (TIRE)

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 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

Turing Defence & National Security (D&NS) is looking to expand [Turing Integrated Research Engineering \(TIRE\)](#), a high performing team of research engineers working on real-world problems aligned with securing the UK. Following in the footsteps of the institute's namesake, Alan Turing, TIRE operates at the intersection of mathematics, engineering and computing and works in close collaboration with the Turing's national security partners.

As a team, we bring together cutting-edge research and motivating mission challenges, using our data science, software engineering and stakeholder management skills to create next generation capabilities for our partners. Day to day, we collaborate with technical and subject matter experts from our partner organisations as well as academics, software engineers, and data scientists from across the Turing's research community. We present our work to a range of audiences including research colleagues, senior decision makers and non-technical stakeholders. We work with state-of-the-art cluster and cloud platforms to realise our collaborators' artificial intelligence and data science research at scale.

We are a cross-disciplinary team and encourage applications from both generalists and specialists including those who self-identify as software engineers, computer scientists, machine learning practitioners, mathematicians, statisticians or more widely as data scientists or data engineers. In particular, applicants focussed predominantly on either applied research or software engineering are most welcome as well as applicants interested in operating at the intersection.

TIRE practices an agile, experiment-driven approach and values a positive, supportive, and collaborative environment in which '*radical candor*' and '*lifelong learning*' are encouraged. We embrace failure as a learning opportunity and necessary precursor to success. We are empowered to take ownership of our work and operate with a high level of autonomy in our roles, to deliver measurable impact to our partners.

Eligibility for DV clearance is an essential requirement for this role. It is preferred that candidates already hold DV or have recently held it.

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HOW YOU WILL MAKE AN IMPACT

- Have and maintain a deep and wide understanding of the problems of the Turing's National Security partners and a portfolio of appropriate approaches to solving these problems.
- Have and maintain a deep and wide understanding of the academic literature in Machine Learning and Artificial Intelligence, especially where applicable to the requirements of the Turing's National Security partners.
- Take ownership of a particular domain challenge area or methodology for the group.
- Maintain a significant proportion of time operating as an individual contributor, performing experiments and developing capabilities, which might include: training and deploying machine learning models; applying data science, statistical and algorithmic techniques to data; building and deploying microservices, data processing/engineering systems and platforms, user interfaces and/or visualisations.
- Work at pace, in a highly collaborative environment, using industry standard tooling for testing, version control and collaboration to create software artefacts that can be shared with Turing's partners.
- Present, disseminate and explain our work including: Documenting capabilities, processes, and systems for effective and efficient reuse across multiple domains; Presentation at Turing D&NS events including monthly meetups and wider Turing events; Presentation at Partner reading groups, conferences and to Partner stakeholders; Publication, support and maintenance of research/prototype software.
- Contribute to a culture of technical excellence within the Institute, for example by leading sessions for internal reading groups.
- Provide technical project management and leadership for research projects, ensuring successful outcomes. Liaise with clients and colleagues to understand and prioritise project goals, and balancing client value with research outputs.
- Line-manage other staff within the group, supporting their career development aspirations.
- Develop new projects in conjunction with the group lead and other colleagues, authoring research proposals and agreeing involvement for the group in activities across the institute.
- Identify and follow through new partnership opportunities for the Turing with other organisations across the D&NS sector.
- Represent the team to both the Turing D&NS leadership and senior stakeholders at our partner organisations and otherwise deputise for the group lead as appropriate.

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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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)
An undergraduate degree plus significant professional experience in a field with significant use of both computer programming and advanced algorithmic, statistical or numerical techniques	E	A
Practical experience applying AI, data science, statistical and algorithmic techniques to real problems. Experience working with data at scale, management of research data and visualisation of complex data. Ability to rapidly assimilate new computational and mathematical ideas on the job and apply them successfully. A deep and wide understanding of the literature in artificial intelligence and machine learning, especially where applicable to the requirements of our National Security partners.	E	A/I
Fluency in one or more modern programming languages used in machine learning. A track record of good practice for producing reliable software and reproducible analyses, including version control, issue tracking, automated testing and package management. Understanding of continuous integration, software quality assurance and infrastructure-as-code. Experience developing for containerised, micro-service focussed deployment (e.g. Docker, Kubernetes) and with public cloud platforms. Experience deploying and maintaining developed capabilities operationally.	E	A/I
A deep and wide understanding of the problems faced by Defence and National Security organisations, and a portfolio of appropriate approaches to solving them. Significant experience developing and deploying technology, or leading and delivering change, in these or similarly highly regulated sectors.	E	A/I
Excellent written and verbal communication skills, able to explain technical work to research, non-technical and senior audiences. Demonstrated by, for example, the visual representation of quantitative data, documentation of software packages or data resources, the authoring of research papers or technical reports, or giving presentations or classes on technical subjects.	E	A/I
Experience representing a team to senior stakeholders in partner organisations, managing senior stakeholders, balancing client value against research outputs, managing conflict and resolving competing priorities. Experience identifying and developing new partnership opportunities and making or evaluating the case for new work, for example authoring or evaluating research proposals or business cases.	E	A/I
Experience leading multiple projects and teams to successful conclusions and line-managing others and supporting their career development.	E	A/I
Commitment to EDI principles and to the Turing's values.	E	A/I
Eligible to obtain and maintain DV security clearance for the duration of employment.	E	A

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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 (maximum 3 pages, no photo) and cover letter (maximum 2 pages) telling us:

- Your past experience working with code and/or data
- Why would you like to become part of Turing Defence & National Security
- How your skillset would complement the activities of the team
- If you wish to share links to blog posts, public code repositories or research papers containing work that you have made significant contribution to, please add a link to those in your cover letter.

As this role requires Developed Vetting (DV) clearance, you are required to include the following information as part of your cover letter.

- Your current nationality
- Your nationality at birth
- Other nationality (include dual if applicable)
- Confirmation that you have been residing in the UK for the past 10 years (if you haven't, please provide details of when and where you resided and the reason)
- Country where you were born
- County in which you were born
- Town where you were born

Please note, if these details are not provided, we will be unable to progress with your application.

For questions about the role, the recruiting process or if you would like to apply using a different format please get in touch with us at recruitment@turing.ac.uk

TERMS AND CONDITIONS

This full-time post is offered on a permanent basis. The annual salary is £82,500 plus excellent benefits including flexible working and family friendly policies, which [can be seen here](#).

This role will be based at the Hub8 MX working space in Cheltenham.

Should the appointed candidate currently hold a DV clearance, a security clearance allowance will be applied, or upon the successful completion of DV clearance.

SECURITY CLEARANCE

Eligibility for Developed Vetting (DV) clearance is a requirement for this role. Eligibility criteria and further information on the process can be found on the UK Government security vetting [website](#). Applicants should check if they are eligible for DV clearance before applying to this role.

The successful candidate will be required to undergo a pre-screening check. This check will be carried out by HMG Defence and Security Partners. Please be advised, by submitting your application you are consenting to this check, and your personal details (full name, date of birth and home address) to be passed onto our HMG Defence and Security Partners to carry out this check.

Many roles in Turing D&NS require higher levels of National Security Vetting where applicants must typically have 5 to 10 years of continuous residency in the UK or a NATO country depending on the vetting level required for the role, to allow for meaningful security vetting checks, amongst other factors. These roles are subject to security restrictions by Turing's partners. The restrictions mean that factors such as your nationality, any nationalities you may have previously held, your foreign connections, and your place of birth can restrict your eligibility to perform the role.

EQUALITY, DIVERSITY AND INCLUSION

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 advise us 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.

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.

Our values



Trust

We create an environment where we have trust and can be trusted



Inclusivity

We expect our Turing community to contribute to a culture that is inclusive and free of barriers



Respect

We all have different roles, priorities and challenges but our shared purpose is the same



Leadership

Leadership is everyone's business; Turing leaders set the right tone and lead by example



Transparency

Everyone should understand the how and the why of our decisions and actions



Integrity

We are all ambassadors for the Turing's mission of changing the world for the better