The Alan Turing Institute

Job Description template July 2020

RESEARCH ASSOCIATE – Foundations of AI-Enabled Digital Twins

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

The AI for Science and Government (ASG) programme at The Alan Turing Institute is seeking to build on the existing research developments at the intersection of statistics and computer science which underpin the transformative role the AI has on economy and society at large.

This role will seek to draw on recent advances in these fields to contribute to the development of the underlying foundations of AI-enabled systems of digital twins, focusing on collaborative learning and decision making, broadly interpreted. The key research challenges will involve scalable kernel methods, Gaussian processes and ensemble methods, with a focus on extending the state-of-the-art in multi-task and transfer learning, federated learning and reinforcement learning for distributed systems.

The candidate will join a vibrant team at the cutting edge of this emerging field, and have the opportunity to engage with key external partners across various industrial sectors. The ideal candidate will have a demonstrated ability to work in a highly collaborative manner and be enthusiastic about engaging widely across disciplinary boundaries and with industry, government and the third sector.

ROLE PURPOSE

This project will be run within the SPF-funded programme on AI for Science and Government, based at The Alan Turing Institute. This programme is focused on research in AI and data science, with accompanying translational activities to ensure impact in the fields applied science, engineering, urban analytics governance, as well as education and training components, in keeping with the vision, mission and charitable aims of The Alan Turing Institute. The role will also be associated with the Lloyds' Registry Foundation funded programme on Data-Centric Engineeering within The Alan Turing Institute.

This post is an appointment to the **Foundations of Ecosystems of Digital Twins** group within the programme on AI for Science and Government at The Alan Turing Institute. You will join a team of researchers affiliated with The Alan Turing Institute working on projects involving the development of theory and methodology related to the development of AI-enabled digital twins. The applicant will be expected to manage collaborations with other researchers within the ASG programme, as well as with the Data-Centric Engineering Programme at the Turing and engage with relevant stakeholders from government bodies and industry.

Informal enquiries may be addressed to Dr Andrew Duncan (a.duncan@imperial.ac.uk). Please note that applications sent directly to this email address will not be accepted.

DUTIES AND AREAS OF RESPONSIBILITY

Please summarise the main duties and responsibilities required in this role

The research associate will work closely with the project investigators based at The Alan Turing Institute with the aim:

- To establish a sound research base within The Alan Turing Institute in order to pursue individual and collaborative research of outstanding quality, consistent with making a full active research contribution in line with the research strategy outlined by the PIs.
- To write or contribute to publications or disseminate research findings using other appropriate media.
- To attend and present research findings and papers at academic and professional conferences, and to contribute to the external visibility of the Institute.
- To ensure compliance with secure handling of data and health and safety in all aspects of work.
- To participate in and develop internal and external partnerships, for example to identify sources of funding, generate income, obtain projects, or build relationships for future activities.

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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		
Research Associate level: PhD in Computer Science, Statistics, Mathematics, or closely related discipline.	**E**	**A**
Research Assistant level: Near completion of a PhD or equivalent level of qualification in Computer Science, Statistics, Mathematics, or closely related discipline.	**E**	**A**
Knowledge and Experience		
A solid background in one or more of the following: Probabilistic Machine Learning , Bayesian Inference, Scalable Kernel Methods and Gaussian Processes, Ensemble Learning, Reinforcement Learning.	**E**	**A**
Experience in design, development and implementation of research software libraries, ideally using one of the following: Python, R, Julia and associated ML frameworks.	**D**	**A&I**
Track record of the ability to initiate, develop and deliver high quality research aligned with the research strategy indicated by the PI and any industrial stakeholders and to publish in peer reviewed journals and conferences	**E**	**A&I**
Communication		
The ability to initiate, plan, organise, implement and deliver programmes of work to tight deadlines.	**E**	**I**
Good effective communication (oral and written) skills, presentation and training skills.	**E**	**A&I**
Good interpersonal skills.	**E**	**I**
A developing track record in producing high quality academic publications.	**D**	**I**
Ability to write research reports and papers in styles accessible to both academic and lay audiences.	**D**	**A&I**
Teamwork and Motivation		
The ability to work in a team and interact professionally within a team of researchers and PhD students.	**D**	I
Liaison and Networking		

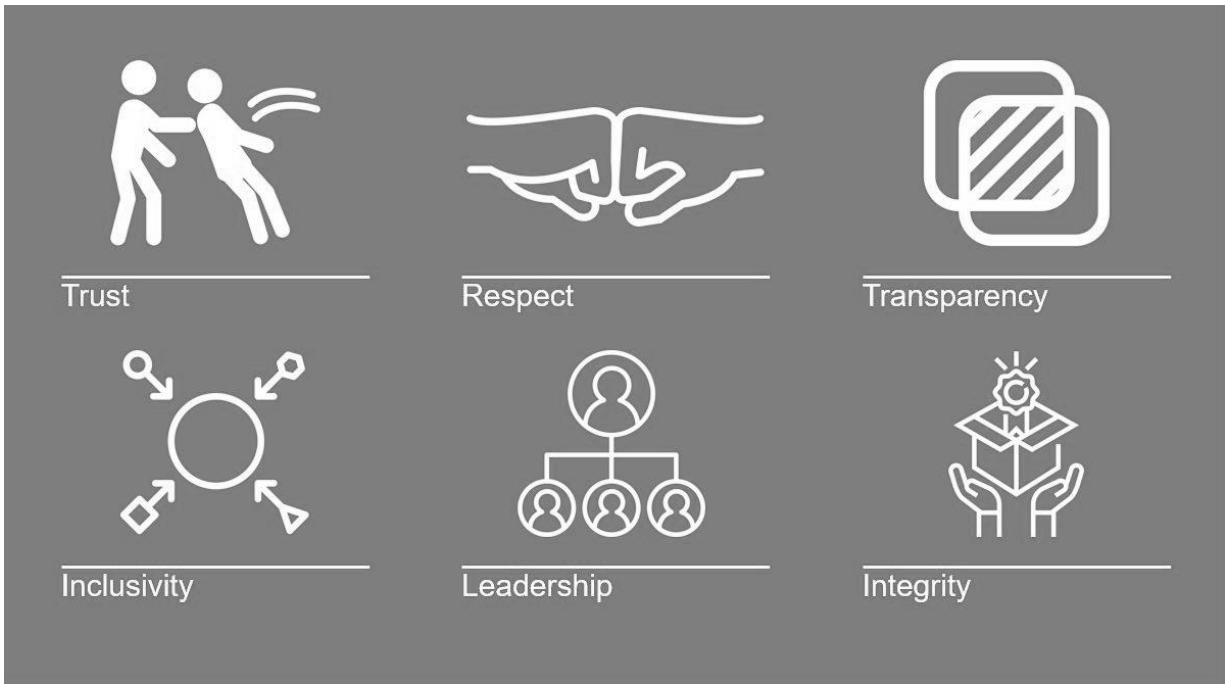
Ability to collaborate successfully with colleagues in a multidisciplinary environment.	E	I
A desire to collaborate with experts in Research.	D	A
Participates in networks within the organisation or externally to share knowledge and information in order develop practice or help others learn.	E	A/I
Service Delivery		
Ability to keep accurate and up to date knowledge of services available in own and related areas of work.	E	A/I
Ability to work across the Research Teams for the AI for Science and Government Programme to contribute and assist in a number of research activities.	E	I
Initiative and Problem Solving		
Ability to use own judgement to analyse and solve problems.	E	A/I
Considers possible solutions to identify solutions which offer wider benefits. Obtains evidence to support thinking.	E	A/I
Ability to lead one's own work, including planning and execution, and to prioritise work to meet deadlines.	E	A/I
Analysis and Research		
Ability to organise working time, take the initiative, and carry out research independently, under the guidance of the PI.	E	I
Teaching and Learning		
Teaching may be required	E	A/I
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.

The Alan Turing Institute

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 0203 862 3340, or email recruitment@turing.ac.uk.

CLOSING DATE FOR APPLICATIONS: 25 March 2021 at 23:59.

TERMS AND CONDITIONS

This full-time post is offered on a fixed-term basis with an end date of 31 March 2023. This role requires an immediate start. The annual salary is £36,000-£40,000 plus excellent benefits, including flexible working and family friendly policies, https://www.turing.ac.uk/work-turing/why-work-turing/employee-benefits

Candidates who have not yet been officially awarded their PhD will be appointed as Research Assistant within the salary range £32,000-£34,000 per annum.

This job description is written at a specific time and is subject to change as the demands of the Institute and the role develop. The role requires flexibility and adaptability and the post holder needs to be aware that they may be asked to perform tasks and be given responsibilities not detailed in this job description.

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, gender reassignment, marital and civil partnership status, pregnancy, religion or belief or sexual orientation. Reasonable adjustments to the interview process can also be made for any candidates with a disability.

Please note all offers of employment are subject to continuous eligibility 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***.***