The Alan Turing Institute

Research Associate / Assistant – Data Centric Engineering – Digital Twins for Multiphase Flow 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 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 400 researchers and a talented business team.

THE ROLE

We are seeking to recruit one postdoctoral research associate or research assistant to work in the areas of digital twins for multiphase flow systems in the energy and manufacturing sectors. The post is an appointment within the Turing-Lloyds programme on Data-Centric Engineering at the Alan Turing institute as part of the AI for Science and Government-funded project entitled **Digital Twins for Multiphase Flow Systems in the Oil-and-Gas, and Fast-Moving Consumer Goods Industries**. You will join a team of researchers affiliated with the Alan Turing Institute supervised by Prof. Omar Matar (Imperial, Chemical Engineering) and Dr Indranil Pan (Imperial and Turing), including research associates and PhD students.

The approach builds on ongoing research within the Data-Centric Engineering programme and will integrate data from optimally-located sensors and instruments, with cutting-edge numerical simulations, and predictive analytics based on advanced machine-learning algorithms, and data-assimilation, with uncertainty quantification. This will lead to a step-change in productivity, efficiency, reduction in emissions and safety. These digital twins developed for the oil-and-gas industry will have elements that are imminently transferrable to FMCG and manufacturing sectors.

You will be expected to perform high quality research under the supervision of the principal investigators. The expectation is that you will produce breakthrough research in the areas of methods for uncertainty quantification and machine learning applied to fluid dynamics solvers and contribute to publishing these results in top rated venues, as appropriate.

You will possess a PhD in Bayesian Inference, Computational Statistics, Uncertainty Quantification or Probabilistic Machine Learning. You should have a strong background in one or more of the following areas: Bayesian Inference, Monte Carlo and Markov Chain Monte Carlo methods, Probabilistic Programming, Gaussian Processes and Fluid Mechanics.
This full-time post is offered on a fixed-term contract for a period of 24 months starting 1 December 2019.

Informal enquiries may be addressed to Professor Omar Matar, o.matar@imperial.ac.uk. Please note that applications sent directly to this email address will not be accepted.

TURING-LLOYDS PROGRAMME ON DATA-CENTRIC ENGINEERING

This project will be run as part of the programme for Data-Centric Engineering, based at The Alan Turing Institute. In partnership with the Lloyd's Register Foundation, the programme brings together world-leading academic institutions and major industrial partners from across the engineering sector. This programme is focussed on research in data science, with accompanying translational activities to ensure impact in the field of engineering, as well as education and training components, in keeping with the vision, mission and charitable aims of both the Foundation and the Turing Institute.

DUTIES AND RESPONSIBILITIES

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

- To establish a sound research base within the Alan Turing Institute in order to pursue individual and collaborative research of high 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.

PERSON SPECIFICATION

The successful candidate will have:

Essential

- Possession of a PhD or an equivalent qualification in Bayesian Inference, Computational Statistics, Uncertainty Quantification or Probabilistic Machine Learning (or a closely related discipline)
- Expertise in application, development and implementation of statistical techniques.
- The ability to work in a team and interact professionally within a team of researchers and students.
- 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 conferences and journals.
- The ability to initiate, plan, organise, implement and deliver programmes of work to tight deadlines.
- Good effective communication (oral and written) skills, presentation and training skills.

- Good interpersonal skills.
- Candidates without PhD/sufficient experience will be considered at the Assistant level

Desirable

- A developing track record in producing high quality academic publications.
- Ability to write research reports and papers in styles accessible to both academic and lay audiences.
- Prior experience with complex fluid dynamics models of industrial and engineering systems.
- Prior experience developing software in a scientific computing context, ideally in C/C++, Python and associated frameworks (Git, IDEs, Linux).

TERMS AND CONDITIONS

This full-time post is offered on a fixed-term contract for a period of 24 months. Happy to Talk Flexible Working.

Salary: £34,000 - £38,000 for Research Assistant; £35,000 – £41,000 for Research Associate (dependent on experience) and a competitive benefits package (https://www.turing.ac.uk/work-turing/why-work-turing/employee-benefits).

APPLICATION PROCEDURE

If you are interested in this opportunity, please click the apply button below. You will need to register on the applicant's portal and complete the application form including your CV, covering letter and contact details for your referees.

If you have questions or would like to discuss the role further with a member of the Institute's HR Team, please contact them on 0203 862 3394 or 020 3862 3357, or email recruitment@turing.ac.uk.

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***.***