The Alan Turing Institute

RESEARCH ASSOCIATE – Data Science for Energy Efficient Built Environments

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 a postdoctoral research associate to work in the area of uncertainty quantification and inference for energy models of built environments. This post is an appointment to the Digital Twins of Built Environment group in the Data-Centric Engineering Programme at the Alan Turing Institute. You will join a team of researchers affiliated with the Alan Turing Institute supervised by Dr. Ruchi Choudhary (Cambridge, Engineering) and Prof. Mark Girolami (Cambridge, Engineering) and working on a range of projects that respond to the critical carbon challenges of the built environment.

The project builds on ongoing research within the Data-Centric Engineering programme which has been pioneering: (i) the development of Bayesian calibration strategies for large-scale models under sparse data (ii) methods for inference and updating of time-varying parameters in energy models (iii) exploitation of new and diverse forms of data to develop data-centric energy models. The project will involve the development of computational techniques directed towards applications in energy efficient buildings with optimized and seamless integration of observations and energy models.

You will be expected to perform high quality research under the supervision of the principal investigators. Specifically, you will produce breakthrough research in the areas of methods for stochastic energy modelling and uncertainty quantification and contribute to publishing these results in top rated journals and at national and international conferences, as appropriate.

You will possess a PhD in Engineering, Computer Science, or related discipline. You should have a strong background in one or more of the following areas: Energy Simulation and Building Physics, Finite Element Models of Heat Transfer in Buildings, Bayesian Inference, Monte Carlo and Markov Chain Monte Carlo methods.

Informal enquiries may be addressed to Dr. Ruchi Choudhary (rc488@cam.ac.uk) or Professor Mark Girolami (mgirolami@turing.ac.uk). Please note that applications sent directly to these email addresses 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 the 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.

PERSON SPECIFICATION

The successful candidates will have:

Essential

- PhD in Engineering, Computer Science, or an equivalent qualification in Building Physics, Building Energy Simulation, Bayesian Inference or Probabilistic Machine Learning (or a closely related discipline).
- Expertise in application, development and implementation of advanced building energy simulation and/or statistical techniques.
- Experience in design, development and implementation of research software libraries, ideally using C/C++ and Python and their associated frameworks.
- The ability to work in a team and interact professionally within a team of researchers and PhD 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 journals and conferences.
- 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.

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 calibration of energy simulation models.

TERMS AND CONDITIONS

This full-time post is offered on a fixed-term contract for a period of 24 months starting on 1st February 2020 or as soon after that as possible. Happy to Talk Flexible Working.

The salary range offered for this role is £35,000 - £41,000 per annum. A competitive benefits package is also available (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 and submit your CV, with contact details for your referees and a covering letter.

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. Applicants who would like to submit their application in a different format please 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***.***