



UNIVERSITY OF LEEDS

## CANDIDATE BRIEF

**Research Fellow in Machine Learning-enabled Optimisation of Engineering Flow Systems, Faculty of Engineering & Physical Sciences**



**Salary: Grade 7 (£33,797 - £40,553 p.a.)**

**Reference: EPSME1013**

**Closing date: 08 December 2019**

**Fixed-term, available from 1 February 2020, until 31 July 2021**

**We will consider flexible working arrangements**

# Research Fellow in Machine Learning-enabled Optimisation of Engineering Flow Systems, School of Mechanical Engineering

**Are you an enthusiastic and ambitious researcher looking for your next challenge? Do you have a background in Machine Learning and Flow Simulation? Do you want to further your career in one of the UK's leading research intensive Universities?**

You will support the research of Professor Harvey Thompson, Head of School of Mechanical Engineering. You will have a strong focus on Machine Learning applied to the design and optimisation, ideally within the context of Computational Fluid Dynamic analyses of flow systems. This complements a range of other activities of CFD-enabled optimisation within the School in areas such as microfluidic heat transfer systems in e.g. electronics cooling, chemical processing or rapid diagnostics; in mitigating the effects of corrosion in engineering flow systems; and flow optimisation in filtration or pharmaceutical applications.

Holding a PhD (or an expectation that a PhD will be awarded soon) in Computer Science, Mathematics, Mechanical Engineering or a related discipline, you will have research expertise in the general area of Machine Learning and its application to data-driven surrogate modelling and/or design optimisation.

## What does the role entail?

As a Research Fellow, your main duties will include:

- Developing Machine Learning methods and software programs to create accurate surrogate models of engineering flow systems using the results of CFD simulations;
- Develop techniques for embedding these Machine Learning methods and software codes within efficient multi-objective flow optimisation methodologies and creating the software codes needed to implement the optimisation methodologies;
- Preparing papers for publication in leading international journals;
- Acting as a mentor in Machine Learning for other members of the research team and provide advice and software coding support as needed;



- Work independently and with other members of the research team to generate research ideas and research proposals for funding in collaboration with colleagues;
- Ensure good day-to-day progress towards project deliverables, ensuring that project objectives are met;
- Maintain good records and back up research data and software according to University requirements;
- Maintain your own professional development and act as a mentor to less experienced colleagues and students as appropriate.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

## What will you bring to the role?

You will have:

- A PhD (or an expectation that a PhD will be awarded soon) in Computer Science, Mathematics, Mechanical Engineering or a related discipline;
- Research expertise in the general area of Machine Learning and its application to data-driven surrogate modelling and/or design optimisation;
- Experience in developing Machine Learning software codes;
- Experience of writing the results of your research in journal or conference papers;
- Excellent communication and interpersonal skills with a flexible and co-operative approach and good time management skills;
- Demonstrate motivation, flexibility, enthusiasm and the ability to work effectively both in a team and without direct supervision;
- Good time management skills, with the proven ability to meet deadlines;
- Willingness to propose initiatives and accept responsibility;
- An ability to work in a cross cultural team;

You may also have:

- Experience of using the Python programming language;
- Experience of using Computational Fluid Dynamics;
- Experience of using design optimisation techniques;



- Experience of working with or supervising research students, Masters students or undergraduate students;
- A willingness to learn new techniques and the ability to work in a changing environment;

## How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised [closing date](#).

## Contact information

To explore the post further or for any queries you may have, please contact:

**[Professor Harvey Thompson](#)**, Head of the School of Mechanical Engineering

Tel: +44 (0) 113 343 2136

Email: [H.M.Thompson@leeds.ac.uk](mailto:H.M.Thompson@leeds.ac.uk)

## Additional information

### Faculty and School Information

Further information is available on the research and teaching activities of the [School of Mechanical Engineering](#).

### A diverse workforce

The Schools in the Faculty of Engineering & Physical Sciences are proud to have been awarded the Athena SWAN [Bronze](#) or [Silver](#) Award from the Equality Challenge Unit, the national body that promotes equality in the higher education sector. Our [equality and inclusion webpage](#) provides more information.

### Working at Leeds

Find out more about the benefits of working at the University and what it's like to live and work in the Leeds area on our [Working at Leeds](#) information page.



### **Candidates with disabilities**

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our [Accessibility](#) information page or by getting in touch with us at [disclosure@leeds.ac.uk](mailto:disclosure@leeds.ac.uk).

### **Criminal record information**

#### **Rehabilitation of Offenders Act 1974**

A criminal record check is not required for this position. However, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our [Criminal Records](#) information page.

