University of Reading

JOB DESCRIPTION

Vacancy reference:	SRF29169
Post Title:	PDRA in machine learning for high impact weather and flood prediction
Grade:	Grade 6
School/Department:	Meteorology (with co-supervision from Computer Science)
Reports to:	Professor Sarah L Dance
Responsible for:	N/A

Purpose

To develop and evaluate machine learning techniques for processing observations of weather and flooding from datasets of opportunity, such as river cameras.

Main duties and responsibilities

The Department of Meteorology at the University of Reading invites applications for a postdoctoral research position, funded by the EPSRC project "Data Assimilation for the Resilient City" (DARE) – (https://research.reading.ac.uk/dare/). The goal of the project is to use Data Science tools and techniques to create a step-change in skill for numerical predictions of urban natural hazards. The research undertaken by the post holder will underpin quantitative use of urban observation data from diverse sources such as citizen science, crowdsourcing and internet of things.

The postholder will

- Develop machine learning systems to extract water level information from HD river camera images. This may include algorithmic developments in deep learning methods.
- Conduct a review identifying areas where machine learning has the potential to improve weather forecasts. This may include a comparison between machine learning and data assimilation techniques.
- Collaborate with project partners such as the Institute for Environmental Analytics, University of Leeds, Met Office and Environment Agency, Farson Digital Ltd.
- Contribute to the writing of papers and reports for publication in leading academic journals and other relevant media.
- Disseminate research findings through participation in workshops, conferences, etc.

Supervision received

The successful candidate will report to Prof Sarah L. Dance (Meteorology) and Dr Varun Ojha (Computer Science). Detailed supervision will be given.

Supervision given

None

Contact

The successful candidate will be based at the University of Reading, Department of Meteorology but with close contact with colleagues in Computer Science. The candidate will be expected to collaborate with several project partners including, but not limited to, the Institute for Environmental Analytics, University of Leeds, Met Office, Environment Agency and Farson Digital Ltd.

Terms and conditions

This is a full-time, fixed term post of up to 16 months. The post holder will be resident in the UK for the entire period of this contract. There are no specified hours of work, but you will be required to work such hours as are necessary to carry out the duties associated with the post. Overtime is not payable.

This document outlines the duties required for the time being of the post to indicate the level of responsibility. It is not a comprehensive or exhaustive list and the line manager may vary duties from time to time which do not change the general character of the job or the level of responsibility entailed.

Date assessed:

PERSON SPECIFICATION

Job Title	School/Department
PDRA in machine learning for high impact weather and flood prediction	**Meteorology**

Criteria	Essential	Desirable
Skills Required	• Able to communicate effectively, both orally and in writing. • Strong analytical and problem solving skills • Able to write and adapt computer programs.	•
Attainment	• Have (or expect shortly to obtain) a PhD or equivalent experience, in computer science, a quantitative physical science, engineering or mathematics. • A good honours degree in computer science, mathematics, a quantitative science or engineering subject •	• Appropriate publication record
Knowledge	• Machine learning	• Flood modelling • Numerical weather prediction • Data assimilation • Remote sensing
Relevant Experience	• Postgraduate level research in a computational, physical, mathematical or engineering science. • Experience giving oral presentations and writing scientific papers	• Postgraduate experience in machine learning • Postgraduate experience in hydrodynamic modelling • Postgraduate experience in data assimilation
Disposition	• Self-motivated with the ability to take initiative • Team working - able to interact constructively and proactively with both internal and external collaborators, and attend national and international meetings and conferences.	

Other	• Able to communicate effectively, both orally and in writing. • Strong analytical and problem solving skills • Able to write and adapt computer programs.	•

Completed by: Prof Sarah L Dance	Date: 3 June 2019