****

**Faculty of Technology**

**School of Computing**

**RESEARCH FELLOW IN DEEP LEARNING MODELS FOR MEDICAL DATA**

**ZZ006612**

**Information for Candidates**

**THE POST**

Please see the attached job description and person specification.

**TERMS OF APPOINTMENT**

Full-time

Fixed term

Salary is in the range from £35,845 to £39,152 and progress to the top of the scale is by annual increments payable on 1 September each year. Salary is paid into a bank or building society monthly in arrears.

Working hours are normally from 8.30 a.m. to 5.15 p.m. Monday to Thursday and 8.30 a.m. to 4.15 p.m. Friday with one hour and ten minutes for lunch. As this post is research based, working hours will vary depending on the needs of the project so a flexible approach is required. Specific working hours will be agreed once an appointment has been made. Overtime is not normally payable but time off in lieu may be given.

Annual leave entitlement is 35 working days in a full leave year. The leave year commences on 1 October and staff starting and leaving during that period accrue leave on a pro-rata basis. In addition, the University is normally closed from Christmas Eve until New Year’s Day inclusive and on bank holidays.

The Appointee will be entitled to join the Local Government Pension Scheme. The scheme's provisions include a final salary based, index-linked pension with an option to exchange some pension for a lump sum on retirement together with dependants’ benefits. Contributions by the employee are subject to tax relief.

There is a probationary period of six months during which new staff are expected to demonstrate their suitability for the post.

It is a condition of the appointment for the proper performance of the duties of the post that the appointee will take up residence at a location such that they are able to fulfil the full range of their contractual duties. This residential requirement will be expected to be fulfilled within twelve months of taking up the appointment. The University has a scheme of financial assistance towards the cost of relocation, details of which can be found on the University website:

<http://www.port.ac.uk/departments/services/humanresources/recruitmentandselection/informationforapplicants/removalandseparationguidelines>

There is a comprehensive sickness and maternity benefits scheme.

**All interview applicants will be required to bring their passport or full birth certificate and any other 'Right to Work' information to interview where it will be copied and verified.** The successful applicant will not be able to start work until their right to work documentation has been verified.

Please note if you are the successful candidate once the verbal offer of employment has been made and accepted, references will be immediately requested. It is the University’s policy that all employment covering the past three years is referenced. A minimum of two references is required to cover this three-year period of employment or study (where there has been no employment). One of your referees must be your current or most recent employer.

The successful candidate will need to bring documentary evidence of their qualifications to Human Resources on taking up their appointment.

To comply with UKVI legislation, non-EEA candidates are only eligible to apply for this post if it has been advertised for a total of 28 days.

If the position has a requirement for Disclosure and Barring Service check (DBS) or Non-Police Personnel Vetting (NPPV), this will be stated in the advert. Further information will be provided once the selection process has been completed.

All applications must be submitted by 23:59 (UK time) on the closing date published.



**UNIVERSITY OF PORTSMOUTH – RECRUITMENT PAPERWORK**

1. **JOB DESCRIPTION**

|  |  |
| --- | --- |
| **Job Title:** | Research Fellow in Deep Learning Models for Medical Data |
| **Grade:** | 7 |
| **Faculty/Centre:** | Faculty of Technology |
| **Department/Service:**  **Location:** | School of Computing  Buckingham Building |
| **Position Reference No:** | ZZ006612 |
| **Responsible to:** | Dr Ivan Jordanov |
| **Responsible for:** | N/A |
| **Effective date of job description:** | 07/01/2021 |

|  |
| --- |
| **Purpose of Job:** |
| This is an exciting opportunity to join an interdisciplinary research team to work as a Research Fellow in Deep Learning at the School of Computing, University of Portsmouth. The successful applicant will undertake research on the EPSRC funded project (£762k) “Deep Learning Models for Fetal Monitoring and Decision Support in Labour”, which integrates with the research programme at the Oxford Centre for Fetal Monitoring Technologies, hosted at the Nuffield Department of Women’s and Reproductive Health, and the Big Data Institute, University of Oxford.  The Fellow will research, investigate, and apply innovative deep learning models for continuous automated evaluation of inputs as cardiotocography (CTG) signals during labour and others. The newly developed methods will be subsequently implemented on a hand-held device by the wider team.  The Fellow will be based at Portsmouth University, will have a Visiting Research Fellow status at Oxford University and will work closely with the entire multi-centre team.  The project outputs will contribute towards an automated clinical decision support tool at delivery wards to avoid asphyxia and brain injury of babies during childbirth. |

|  |
| --- |
| **Key Responsibilities:** |
| * Work closely with the two Principal Investigators, based at Portsmouth and Oxford respectively, and support the multi-disciplinary research team, to deliver the relevant EPSRC-funded project objectives; * Research, investigate and apply novel Deep Learning Models for continuous risk assessment of the baby’s health during labour, utilising our unique maternity dataset comprising 100,000 births at term, provided by the Oxford Centre for Fetal Monitoring Technologies; * In particular, develop multimodal deep neural network (DNN) architectures, for both signal and image inputs, building on our preliminary Multimodal Convolutional Neural Networks (MCNN) models to allow the use of a variety of inputs: fetal heart rate; uterine contractions, spectrograms, clinical risk factors, etc. as independent learning branches in the overall architecture; * Support the implementation of the above algorithms into a software platform on a tablet (an App) to communicate with the clinicians and provide risk assessment, in conjunction with the team based at Oxford; * Take part in and support the testing, validation and assessment of the capability, accuracy, and efficiency of the models by conducting simulations and experiments with both real-time and retrospective data (including research visits at Oxford University). |

|  |
| --- |
| **Working Relationships:** |
| The EPSRC project Principal Investigators  The project multi-disciplinary research team |

1. **PERSON SPECIFICATION**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Attributes** | **Rating** | **Source** |
| **1.** | **Specific Knowledge & Experience** |  |  |
| 1.1 | In-depth knowledge of Machine Learning/Neural Networks. | E | AF, S |
| 1.2 | Skills in applying Machine Learning/Neural Network methods. | E | AF, S |
| 1.3 | A background in Data analytics, database and image processing. | E | AF, S |
| 1.4 | Previous experience in computational modelling and using automated platforms for deep learning (Keras, PyTorch, or TensorFlow, etc.). | D | AF,S |
| **2.** | **Skills & Abilities** |  |  |
| 2.1 | Ability to work individually and as part of a team. | E | AF, S |
| 2.2 | Excellent presentation and communication skills, including written and spoken English. | E | AF, S |
| 2.3 | Critical thinking and problem-solving skills with attention to detail. | E | AF, S |
| 2.4 | Good communications and interpersonal skills. | E | AF, S |
| 2.5 | A collaborative approach to research and ability to work efficiently with diverse members of the team, as this role will integrate within a larger team across the collaborating Portsmouth and Oxford Universities. | D | AF, S |
| **3.** | **Qualifications, Education & Training** |  |  |
| 3.1 | A PhD or equivalent professional qualification in Computer Science or Machine Learning, or equivalent research in relevant areas. | E | AF |
| 3.2 | PhD achieved or close to completion. | E | AF |
| **4.** | **Other Requirements** |  |  |
| 4.1 | Experience working with healthcare data and/or clinical decision support software. | D | AF, S |
| 4.2 | Drive and self-motivation to delivering research with real-world impact. | D | AF, S |
| 4.3 | Aspirations for growth and development for new skills and expertise. | D | AF, S |
| 4.4 | Ability to understand and work to deadlines. | D | AF, S |
| 4.5 | Flexible in working patterns, and good organisational, time-management, and priority-setting skills. | D | AF, S |

**Legend**

Rating of attribute: E = essential; D = desirable.

Source of evidence: AF = Application Form; S = Selection Programme (including Interview, Test, Presentation)

**JOB HAZARD IDENTIFICATION FORM**

|  |  |  |  |
| --- | --- | --- | --- |
| **Please tick box(s) if any of the below are likely to be encountered in this role. This is in order to identify potential job related hazards and minimise associated health effects as far as possible. Please use the** [**Job Hazard Information**](http://www.port.ac.uk/departments/services/humanresources/occupationalhealthservice/jobhazardinformation/filetodownload,164407,en.doc) **document in order to do this and give details in the free text space provided.** | | | |
| 1. International travel/Fieldwork |  | 13. Substances to which COSHH regulations apply (including microorganisms, animal allergens, wood dust, chemicals, skin sensitizers and irritants, welding fume) |  |
| 1. Manual Handling (of loads/people) |  | 14. Working at height |  |
| 1. Human tissue/body fluids (e.g. Healthcare settings, First Aiders, Nursery workers, Laboratory workers) |  | 15. Working with sewage, drains, river or canal water |  |
| 1. Genetically Modified Organisms |  | 16. Confined spaces |  |
| 1. Noise > 80 DbA |  | 17. Vibrating tools |  |
| 1. Night Working   (between 2200 hrs and 0600 hrs) |  | 18. Diving |  |
| 1. Display screen equipment | x | 19. Compressed gases |  |
| 1. Repetitive tasks (e.g. pipette use etc) |  | 20. Small print/colour coding |  |
| 1. Ionising radiation/ non-ionising radiation/lasers/UV radiation | | 21. Soil/bio-aerosols |  |
| 10. Asbestos and or lead | | 22. Nanomaterials | |
| 11. Driving on University business: mini-bus (over 9 seats), van, bus, forklift truck, drones only) | | 23. Workplace stressors (e.g. workload, relationships, job role etc)  x | |
| 12. Food handling | | 24. Other (please specify) | |

**Completed by Line Manager/Supervisor:**

|  |  |
| --- | --- |
| **Name (block capitals)** | Ivan Jordanov |
| **Date** | 04/01/2021 |
| **Extension number** | x6786 |

Managers should use this form and the information contained in it during induction of new staff to identify any training needs or requirement for referral to Occupational Health (OH).

Should any of this associated information be unavailable please contact OH (Tel: 023 9284 3187) so that appropriate advice can be given.