Job Description

Job Title: **Research Fellow in Medical Imaging**
Job Ref: **SCT269**
Campus: **Hendon**
Grade: **Grade 7**
Salary: **£38,206 - £43,887 per annum, including Outer London Weighting**
Period: **35 Months**
Reporting To: **Professor Richard Bayford, PI**

Role Summary

The Project: PNEUMACRIT will provide a revolutionary multi sensor wearable imaging system that will inform lung function diagnosis for infants and children with conditions that can lead to respiratory problems. Although respiratory support, especially mechanical ventilation, can improve their survival, it also may cause severe injury to the vulnerable lung, resulting in chronic pulmonary morbidity lasting into adulthood. PNEUMACRIT has the potential to provide early detection of respiratory failure in infants, by providing a low-cost monitoring system, which will also facilitate optimisation of the respiratory support. This will provide both immediate benefits and decrease the risk of patients developing long-term respiratory disorders. PNEUMACRIT pursues breakthroughs in analytical measurement, microsystems embedded in flexible printable wearable materials, signal processing, and organic devices, to produce multi-parameter clinical measurements obtained from the data produced from electrical impedance tomography (EIT), Electrocardiogram (ECG) and apnoea monitoring. EIT is a non-radiative, inexpensive technique that uses small electrical currents to produce cross sectional images of the body that can facilitate real time dynamic monitoring of lung aeration, and recent studies have shown that it is effective in monitoring aeration in preterm babies in a clinical setting. However, to maximise its diagnostic potential, this EIT information need to be combine with others non-invasive measures. Advances in electrode technologies within the project will enable multi-site recordings, without the need for physical interconnection and integrated power supplies, opening the door to a new generation of diagnostic wearables. Such monitoring is crucial because each year millions of babies in across the world suffer from respiratory failure due to immaturity of the lung or infectious diseases. In addition, standard lung function tests are not suitable for use with babies and young children until they are old enough to actively co-operate with instructions (~age 7 years). Therefore, PNEMACRIT could, in future, provide valuable lung function information to this age group as well.

The Project:

Job Purpose
- To research and develop advanced image analysis and image reconstruction software. Validating the parameters derived from the images, using data from simulations and physical models to support PNEMACRIT
- To lead and manage a relevant work package in support of the project.

Main Responsibilities:

- To carry out individual and collaborative research relevant to the project
- To contribute to the development of software according to project specifications
- To produce research reports and deliverables related to the project
- To lead or prepare for publication of conference and peer-reviewed journal articles
- To undertake general administrative tasks to ensure the smooth running of the project
- To coordinate with research partners and stakeholders related to the project.

- To assist in limited teaching and student project supervision as agreed by Project Coordinator.
- To assist in any other tasks defined by the line manager as appropriate to the post and grade

Hours: 35.5 hours per week, 52 weeks per annum, actual daily hours by arrangement.

Leave: 35 days per annum plus eight Bank Holidays and seven University days taken at Christmas. All leave should be agreed in advance with the line manager.

Flexibility: Please note that, given the need for flexibility in order to meet the changing requirements, the duties/location of this post and the role of the post-holder may be changed after consultation.

Qualifications, Experience, Knowledge and Skills

Essential

- A PhD or equivalent, in a relevant discipline (e.g., medical physics, bioengineering, mathematics)

- Experience in researching and developing image reconstruction algorithms and modelling.

- Excellent programming skills for using MATLAB.

- Experience with working on R&D problems relevant or similar to Electrical Impedance Tomography.

- Able to write project reports under time pressure.

- Experience and track record of publishing research.
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- Experience in developing innovative concepts, products or services.

- Experience in using initiative and creativity for research, problem solving, data analysis, and conclusion formulation.

- Experience in leading and collaborating project tasks and activities among project partners.

- Able to communicate with co-workers, partners and end-users.

Desirable

- Experience in working in large and / or EU projects.

- Sound knowledge of respiratory systems.

No Parking at Hendon campus: There are no parking facilities for new staff joining our Hendon campus, except for Blue Badge holders. If you are applying for a post at our Hendon Campus please ensure you can commute without using a car.

Information on public transport to Hendon can be found here:

http://www.mdx.ac.uk/campus/campuses/docs/Hendon_campus_map.pdf

We offer an interest-free season ticket loan, interest-free motorbike loan, and bicycle and motorbike parking and changing facilities.

Flexible working applications (including part-time working) will be considered.

The postholder should actively follow Middlesex University policies and procedures and maintain an awareness and observation of Fire and Health & Safety Regulations.

What Happens Next ?

If you wish to discuss the job in further detail please contact Prof Richard Bayford r.bayford@mdx.ac.uk or Dr Andrew Tizzard a.tizzard@mdx.ac.uk

If selected for interview, you will hear directly from someone in the School/Service/Campus, usually within 3 weeks of the closing date. If you do not hear from us you may assume that your application was unsuccessful.