DEPARTMENT OF ENGINEERING SCIENCE

FURTHER PARTICULARS

Research Assistant in Signal Processing (Deep Brain Stimulation)

DF09036

Thank you for your interest in this job.

This pack provides the following information:

- The department and its work
- The post and the selection criteria
- Terms and conditions
- Notes for candidates including how to apply
- Working for the University of Oxford

Closing date: Midday 15th July 2009

We look forward to hearing from you soon. In the meantime if you have any questions, please don't hesitate to contact us.

THE DEPARTMENT OF ENGINEERING SCIENCE

Founded in 1908 the Department of Engineering Science is one of the largest departments in the University of Oxford, occupying laboratories and workshops with a total floor area of 19,000 square metres. We employ around 70 academic staff and 200 academic-related and support staff (including research assistants, lab technicians and clerical assistants).

As the only unified department in the UK to offer accredited courses in all the major branches of engineering, our academic and research staff are committed to providing a common engineering foundation as well as to advanced work in their own specialities. The department has a substantial research portfolio, including much that is directly supported by industry. There are no barriers between the different branches of engineering, and we are involved in a great deal of multi-disciplinary research collaborating with groups in other departments from Archaeology to Zoology. We also have especially strong links with computing, materials science, medicine and also with economics and management studies. Every year the Department produces around 160 new engineering graduates who go on to a wide variety of occupations - including car design, construction, electronics, healthcare and aerospace.

For more information please visit our website at http://www.eng.ox.ac.uk/

Research

The total value of funding from research grants and contracts (from government agencies, industry and charitable foundations) is close to £25M. The Department has received the highest grade in all of the Research Assessment Exercises: in both 1996 and 2001 it was graded 5*(A) - 'research quality that equates to attainable levels of international excellence in a majority of sub-areas of activity and

attainable levels of national excellence in all others'. In the most Research Assessment Exercise (2008), 85% of the academic staff were rated as 4* or 3* researchers, making the Department the second highest ranked general engineering department in the UK, behind Cambridge (which does not have a Biomedical Engineering Institute or Division).

Institute of Biomedical Engineering

Biomedical engineers, in partnership with clinical colleagues, can make a unique contribution to addressing unmet needs in the prevention, early diagnosis or treatment of major diseases in the 21st century. The Research Assistant will be based in brand new laboratories within the Institute of Biomedical Engineering (IBME), on the University's medical research campus adjacent to the Churchill Hospital (about a mile from the City centre). The Institute is a dedicated research institute of the Department of Engineering Science, which is housed in a brand new 2000 m^2 building opened in April 2008. The Institute's core mission is to develop novel medical devices, technology and systems capable of delivering substantial healthcare benefit through personalised monitoring and/or treatment.

Research at the IBME covers medical imaging, patient monitoring, ultrasound therapy, physiological modelling, tissue engineering, orthopaedic engineering and drug delivery systems. Most of this research is linked to clinical programmes in heart disease, stroke, cancer, organ transplantation, regenerative medicine, acute care and the management of chronic disease (e.g. asthma, diabetes). More information about the Institute and its research programmes may be found at www.ibme.ox.ac.uk.

The Institute is undergoing a major expansion this autumn, and will be appointing nine Post-Doctoral Research Assistants and five Research Assistants in the following areas: Monitoring for health (fetal/neonatal imaging, Deep Brain Stimulation), Targeting drug delivery for cancer (which includes both imaging and ultrasound activation of nanoparticles), and Treating Cerebrovascular disease (physiological modelling in stroke and stent design for aneurysms).

ABOUT THE POST

Terms and Conditions

Grade:	Academic-related grade 6
Salary:	£25,623 p.a. Starting salary will depend on qualifications and experience. If you are appointed at a salary below the top of this range, your salary will automatically be increased each year until you have reached the top point. Pay and benefits for part-time appointments are worked out on a 'pro rata' basis.
Hours of Work:	Full-time
Holiday:	For full-time staff, 38 days a year (inclusive of 8 bank holidays and departmental closed days)
Length of contract:	Fixed term for 24 months, with the possibility of renewal for a further 12 months
Probationary Period:	6 months
Reports to:	Dr Penny Smith (IBME), (Co-supervised by Prof. John Stein (Dept of Physiology, Anatomy & Genetics), Morten Kringelbach (Dept Psychiatry), and Prof. Tipu Aziz (Dept of Neurosurgery)

Job description / Selection Criteria

Based at the IBME, the postholder will be working on a new five-year project entitled "Neurodegenerative diseases (Deep-Brain Stimulation)". The project will be carried out in the IBME, in collaboration with the Functional Neurosurgery Group at the Department of Neurosurgery. Its aim is to improve Deep Brain Stimulation (DBS) treatment for movement disorders and central neuropathic pain, by developing a demand neuro-stimulator that will adapt stimulation to the individual pathological brain oscillations recorded in each patient.

The successful candidate will have a good honours degree (or equivalent) in engineering (particularly electronic engineering), computing or physics, and will have an interest in biomedical signal processing. Excellent communication skills and a demonstrable ability to work in a multidisciplinary team are also required. Prior experience in specifying and commissioning software for medical devices or systems is desirable.

Key Tasks.

1. Managing own research and administrative activities, within the guidelines provided by senior colleagues
2. Contributing to wide project planning
3. Developing algorithms to analyse signals recorded from deep brain electrodes.
4. Characterisation of patients' oscillatory patterns prior to surgery using adaptive beam forming magnetoencephalography (MEG).
5. Attending conferences and presenting recent work and progress reports at meetings with industrial and academic collaborators.
6. Preparing papers for publication.
7. Helping with the supervision of DPhil, MSc and MEng students where appropriate.

Detailed tasks

1. Developing and evaluating software to analyse Local Field Potentials recorded from deep brain electrodes and predict tremor oscillations.
2. MEG mapping of the site of maximal pathological oscillation in individual patients for electrode targeting.
3. Technical support for clinical studies.
4. Development of algorithms for other conditions – akinesia, dystonia, pain.
5. Reporting regularly on progress to Dr Smith and at meetings of collaborators.
6. Collaborating with other researchers in the laboratory working on related women's health projects.
7. Attending conferences and presenting recent work and progress reports during meetings with collaborators.
8. Preparing papers of a high standard for publication.
9. Helping with the supervision and guidance of graduate and MEng students where appropriate.

Qualifications, Training and Experience

Essential

1. A good Honours degree (Upper Second or above) in electronic engineering, computing or physics.
2. Post-graduate experience to be able to work within an established biomedical engineering research programme.

3. Demonstrated skills in biomedical signal processing, preferably in analysis of MEG (or equivalent) signals.
4. Experience in integration of signal processing within medical device or system.
5. An understanding of data acquisition.
6. Ability to write clear, correct, concise English.
7. Ability to work effectively as part of a team.
8. Good time management skills and ability to meet project deadlines.

Desirable

1. Working towards a doctorate in a relevant area
2. Evidence of strong academic achievement and research potential, demonstrable via for example academic or work distinctions/ prizes
3. Experience in the application of engineering principles to biological systems.
4. Experience in MEG analysis, using beamforming or tomography.
5. Experience of patient interaction, preferably within context of Deep Brain Stimulation or similar treatment.
6. Demonstrated ability to make clear, well illustrated presentations of scientific material.
7. Experience of working in a multi-disciplinary team, especially one with includes clinicians.
8. Willingness to contribute to the supervision of graduate students and undergraduate projects.

HOW DO I APPLY?

Applications for this post must include all of the following:

- your curriculum vitae (CV)
- a letter explaining how you meet the requirements of this post (described in the job description/selection criteria section above)
- completed personal details and equal opportunities monitoring forms, available for download from http://www.eng.ox.ac.uk/jobs/. Alternatively, you can request hard copies by emailing administrator@eng.ox.ac.uk or telephoning on 01865 273013.

You should ensure that your CV describes what you have been doing over at least the last 10 years. This may have been employment, education, or you may have taken time away from these activities in order to raise a family, care for a dependent, travel, or for any other reason. Your application will be judged solely on the basis of how your skills and experience match the requirements of the post, and we are happy to consider transferable skills or experience which you may have gained outside the context of paid employment or education.

Please e-mail your covering letter and the completed forms to: administrator@eng.ox.ac.uk or send to:

Mrs Debbie Wyatt
PA to the Senior Administrator
Department of Engineering Science
Parks Road
Oxford
OX1 3PJ

Applications for this post must be received **by no later than 15th July 2009 at 12 noon**. Applications received after this date will not be considered. Interviews are currently planned for the week beginning 27th July (likely to be 23rd and 24th July). Please make sure you quote reference number **DF09036**.

How will the information on the forms be used?

The information collected on the equal opportunities recruitment monitoring form does **not** form part of the selection process and will not be circulated to the selection panel. It will be used solely to monitor the effectiveness of the University's equal opportunities policy.

Your CV, covering letter, and personal details form will be circulated to the selection panel. They will use this information to assess your suitability for the post against the selection criteria. If appointed, your application will be retained on your confidential staff file. If you are unsuccessful, your application will be retained for six months and then disposed of securely.

At all times the information will be held securely in accordance with the terms of the Data Protection Act 1998.

Am I eligible to apply to work for the University?

All appointments are made in accordance with the University of Oxford Equal Opportunities Policy and Code of Practice and applications are welcomed from a wide range of candidates. The University undertakes not to discriminate unlawfully against any applicant on the basis of any information revealed.

The Immigration, Asylum and Nationality Act 2006 makes it a criminal offence for employers to employ someone who is not entitled to work in the UK. We therefore ask applicants to provide proof of their right to work in the UK before employment can commence. Applicants who would need a work visa if appointed to the post are asked to note that under the UK's new points-based migration system they will need to demonstrate that they have sufficient points, and in particular that:

(i) they have sufficient English language skills (evidenced by having passed a test in basic English, *or* coming from a majority English-speaking country, *or* having taken a degree taught in English)

and

(ii) that they have sufficient funds to maintain themselves and any dependants until they receive their first salary payment.

Further information is available at:
http://www.ukba.homeoffice.gov.uk/workingintheuk/tier2/generalarrangements/eligibility/
In accordance with current Home Office regulations you may not be eligible to apply to work for the University if you do not have the right to work in the UK and you are applying for a post in grades 1-5.

Will I be asked to provide any other information?

Employment with the University is conditional upon satisfying the following requirements:

- proof of identity - in the form of a passport, birth certificate, or other acceptable document;
- proof of address - in the form of a recent utility bill or bank statement;
- proof that you are entitled to work in the UK;
- proof of any qualifications required for this post - in the form of certificates or transcripts.

Please note that you will need to provide original documents and where any documents are not in English a certified translation will be required. ***Do not include these documents with your***

application. You will be sent a request for the relevant information at the appropriate point in the selection process.

In addition, if you are selected for this post:

- your medical fitness to undertake the duties of the post will be assessed by the University's Occupational Health Service;
- we will take up references to ensure your suitability for appointment.

Employment with the University is also subject to satisfactory completion of a probationary period.

References

Please give the details of two people who have agreed to provide a reference for you. If you have previously been employed, your referees should be people who have direct experience of your work through working closely with you for a considerable period, and at least one of them should be your formal line manager in your most recent job (in the case of internal candidates this will be the Head of Department or the departmental administrator). Otherwise they may be people who know you from recent college, school, or voluntary experience. It is helpful if you can tell us briefly how each referee knows you (e.g. 'line manager', 'work colleague', 'college tutor'). Your referees should not be related to you.

Your referees will be asked to comment on your suitability for the post and to provide details of the dates of your employment; your attendance during the last 12 months; and of any disciplinary processes which are still considered live. We will assume that we may approach them at any stage unless you tell us otherwise. If you wish us to ask for your permission before approaching a particular referee, or to contact them only under certain circumstances (for example, if you are called to interview) you must state this explicitly alongside the details of the relevant referee(s).

EQUAL OPPORTUNITIES AT THE UNIVERSITY OF OXFORD

As an Equal Opportunity employer, we positively encourage applications from people of different backgrounds. All our jobs are filled in line with our equal opportunities code of practice, which helps us make sure that men and women, people of different religions or beliefs, ages, racial groups, and those with disabilities are all treated fairly. If you have any questions about equal opportunities at the University of Oxford, please visit our web-site at http://www.admin.ox.ac.uk/eop.

POLICY STATEMENT

The policy and practice of the University of Oxford require that all staff are afforded equal opportunities within employment. Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. Subject to statutory provisions, no applicant or member of staff will be treated less favourably than another because of his or her gender, marital or civil partnership status, sexual orientation, religion or belief, racial group, age or disability.

WORKING FOR THE UNIVERSITY OF OXFORD

At the University of Oxford, we're naturally very proud of our outstanding reputation for scholarship and research. But we're also proud to say that we're one of the region's biggest and best-established employers, with a real diversity of staff helping to sustain our success - from lab. assistants, cleaners, technicians and secretaries, to IT, finance and administrative professionals. Join us, and you can expect to find yourself working in a friendly, open-minded atmosphere where

your ideas will be welcomed, with an interesting and satisfying job to do, and with plenty of opportunities to learn new skills, or maybe even get some extra qualifications.

- **Training** - we train staff, both in the skills needed for starting the job, and to develop afterwards. If you don't have all the skills listed in an advert (e.g. computer packages), but know that you are a quick learner, it is worth asking if training might be available.

- **Working hours** - departments may be able to be flexible about working patterns to help staff combine work with responsibilities at home. Even if advertisements give full-time hours, this can sometimes be adjusted, and it is always worth asking. For instance, term-time-only working can sometimes be accommodated.

- **Pensions** - all staff are able to join the University's final salary pension scheme, which provides excellent benefits on retirement.

- **Disability** - if you have a disability, we have specialist staff who can help you to start and stay in work.

- **Childcare** - we have three subsidised nurseries for under-fives, subsidised places at some other local nurseries and salary sacrifice and virtual voucher schemes enabling parents to save on tax and/or NI contributions.

- **Parenting** - as well as providing the childcare facilities mentioned above, we have generous maternity and paternity leave schemes to help new parents on our staff.

- **Cultural and religious needs** - we respect the cultural and religious lives of our staff. If you need time away from work, or special facilities, and can give plenty of notice for arrangements to be made, this will always be considered.

- **Holidays and further benefits** - full-time staff receive 38 days holiday and all staff members are allowed free access to the University's first-class sports facilities.

All data supplied by applicants will be used only for the purposes of determining their suitability for the post and will be held in accordance with the principles of the Data Protection Act.