UNIVERSITY OF CAMBRIDGE

Athena SWAN Silver Award

Further Information: HR7.

Job title	Research Assistant in Computational Modelling of Neural Interfaces
Grade	5
Salary range	Research Assistant: £33,662 - £36,320
Staff Group	Research
Department / Institution	Department of Engineering

Role-specific information

Role Summary

A position exists for a Research Assistant to contribute to an exciting new research project developing minimally invasive implantable neural probes for interfacing with the brain.

The role will focus on computational modelling and simulation of neural interfaces, using Sim4Life and related computational tools to investigate electrical performance, interactions with biological tissue and the safety of implantable devices. The successful candidate will help establish and apply simulation workflows to evaluate probe designs, investigate relevant electrical and biophysical parameters, and inform the development of next generation neural interfaces.

The postholder will work within a multidisciplinary research team spanning microfabrication, neural engineering, computational modelling and electrophysiology. Duties will include conducting independent research within the agreed programme, developing and implementing computational models, analysing and interpreting simulation results, and contributing to experimental validation and the dissemination of research through publications and presentations. The successful candidate will also collaborate with researchers involved in device fabrication and electrophysiological characterisation, ensuring that modelling outcomes inform the design and evaluation of implantable neural probes.

Key Responsibilities

Research • Develop, implement and conduct computational simulations to investigate the design, electrical performance and safety of minimally invasive implantable neural probes. • Use Sim4Life to model electrical fields, tissue interactions and relevant device parameters, informing the design and optimisation of neural interfaces. • Analyse, interpret and document simulation results, critically evaluating modelling assumptions and identifying factors that influence device design, performance and safety. • Contribute to the development and refinement of computational models and simulation workflows, including defining appropriate model parameters, boundary conditions and evaluation criteria. • Work with experimental researchers to relate simulation findings to device fabrication, electrical characterisation and electrophysiological measurements. • Undertake independent research activities within the agreed programme, contributing to the development of research objectives and the planning of experiments and simulations. • Prepare research findings for publication and presentation, including contributing to scientific manuscripts, reports and presentations at group meetings and relevant conferences. • Maintain and continually develop knowledge of computational modelling, neural interfaces, bioelectronics and relevant developments in the field.	**70%**
Planning and Organising • Plan and manage day to day research activities, including computational simulations, data analysis and reporting, within the agreed research programme. • Organise simulation tasks and computational resources efficiently, prioritising activities to meet project milestones and deadlines. • Maintain accurate records of simulation parameters, model configurations, analyses and results to support reproducibility and effective project documentation. • Coordinate modelling activities with device fabrication and experimental characterisation work to avoid conflict or duplication of effort and ensure that computational findings inform the wider research programme. • Plan the use of research resources, seminars and meetings, as appropriate	**10%**

Teaching and Learning Support • May assist with the supervision of undergraduate and postgraduate research projects relevant to computational modelling, neural engineering and bioelectronics. • May contribute to the development of students' research skills by sharing relevant modelling approaches, analytical methods and technical knowledge. • May assist with the preparation or delivery of research seminars and presentations related to the project.	**10%**
Liaison and Networking • Liaise with colleagues, students and collaborators within the research team and across relevant engineering, biomedical and neuroscience disciplines. • Work collaboratively with researchers involved in neural interface design, fabrication, electronics and packaging to support the integration of computational modelling with experimental research. • Communicate modelling results, technical challenges and research progress effectively at group meetings and project discussions. • Develop and maintain communications with the other project collaborators, contributing to the exchange of knowledge relevant to the project.	**10%**

Location	Department of Engineering, The Institute for Biomedical Innovation, 11 JJ Thomson Avenue, Cambridge, CB3 0FF
Working pattern	Full time
Hours of Work	Your employment is full time. There are no conditions relating to hours and times of work but you are expected to work such hours and days as are reasonably necessary for the proper performance of your duties. Your times of work should be agreed between you and your head of institution, or his/her nominee.
Length of appointment	The funding is for 12 months or through until 30/11/2027, whichever of these comes soonest.

Limited funding	This post is funded by a research grant and, in the event that this funding should cease, the post may be at risk of redundancy. In the first instance, funding is available for 12 months or until 30/11/2027, whichever of these comes soonest.
Probation period	Probation period is 6 months. Information at: http://www.admin.cam.ac.uk/cam-only/offices/hr/probation/length.html
Annual leave	Full time employees are entitled to annual paid leave of 6.6 weeks (or 41 days for those working full time), inclusive of public holidays (pro-rata for part-time staff). The period for calculating entitlement to holiday leave in any particular year is the academic year i.e. 1 October to 30 September.
Pension eligibility	You will automatically become a member of the Universities Superannuation Scheme (USS) on commencement of employment. Please note that it is not possible to opt out of the scheme until you have received certain specified information about the pension scheme and this will be sent to you shortly after you have been paid for the first time. Pension scheme details are available on our web pages at: http://www.pensions.admin.cam.ac.uk/. Information about the legal requirement for the University to automatically enrol its eligible jobholders into a qualifying workplace pension scheme is available on our web pages at: http://www.pensions.admin.cam.ac.uk/auto-enrolment-workplace-pensions.
Retirement age	The University does not operate a retirement age for research staff. Further details are available in the University Retirement Policy on our web pages at http://www.hr.admin.cam.ac.uk/policies-procedures/retirement-policy/statement-policy.

Person Profile

This section details the knowledge, skills and experience we require for the role.

Education & qualifications	An undergraduate degree in Electrical Engineering, Biomedical Engineering, Physics, Applied Mathematics, Computational Engineering or a closely related discipline. A Master's degree or equivalent research experience in computational modelling, bioelectronics, neural engineering, medical devices or a related field is desirable.

Specialist knowledge & skills	A sound understanding of electrical engineering principles, with the ability to apply these to the analysis of neural interfaces and implantable bioelectronic devices. Knowledge of finite element modelling and experience with COMSOL Multiphysics, Sim4Life or equivalent simulation platforms. An understanding of the electrical properties of biological tissues and the principles underlying electrical stimulation and recording through neural interfaces. Knowledge of the design and performance requirements of implantable neural devices, including electrical safety, electrode and tissue interactions, and relevant biophysical constraints. The ability to analyse simulation outputs, interpret results in the context of device performance, and communicate findings clearly to a multidisciplinary research team.
Interpersonal & communication skills	Excellent written and oral communication skills, including the ability to present technical findings clearly and contribute to research publications and presentations. The ability to work independently while collaborating effectively with researchers from engineering, neuroscience and related disciplines. A proactive approach to problem solving, with the ability to critically evaluate modelling assumptions and develop solutions to technical challenges.
Relevant experience	Experience in electrical systems, biomedical devices, neural interfaces or related physical systems. Practical experience developing, implementing or interpreting finite element simulations using COMSOL Multiphysics, Sim4Life or a comparable platform. Experience assessing electrical performance, field distributions or other relevant physical parameters in complex systems. Experience with neural interfaces, electrophysiology, bioelectronics or implantable medical devices is desirable. Experience in analysing research data, documenting technical work and contributing to scientific publications or presentations is desirable.
Additional requirements	The ability to organise and manage research activities effectively, prioritise competing tasks and deliver work within agreed timescales.

	A willingness to develop new modelling approaches and acquire specialist knowledge relevant to minimally invasive neural interfaces and implantable bioelectronic systems. The ability to engage constructively with experimental researchers and use simulation results to inform practical device design and evaluation.

Terms and Conditions

Pre-employment Check Requirements

We have a legal responsibility to ensure that you have the right to work in the UK before you can start working for us. If you do not have the right to work in the UK already, any offer of employment we make to you will be conditional upon you gaining it. If you need further information, you may find the Right to Work page within the 'Applying for a job' section of the University's Job Opportunities pages helpful (please see http://www.jobs.cam.ac.uk/right/have/).

Application Process

To submit an application for this vacancy, please click on the link in the 'Apply online' section of the advert published on the University's Job Opportunities pages. This will route you to the University's Web Recruitment System, where you will need to register an account (if you have not already) and log in before completing the online application form.

Please ensure that you upload your Curriculum Vitae (CV) and a covering letter in the Upload section of the online application. If you upload any additional documents which have not been requested, we will not be able to consider these as part of your application.

If you have any questions about this vacancy, please contact If you have any questions about this vacancy, please contact Amparo Güemes (ag2239@cam.ac.uk) for queries of a technical nature related to the role and Kirsty Sylvester (kjs64@cam.ac.uk) for queries related to the application process.

General Information

The University of Cambridge

The University of Cambridge is one of the world's oldest and most successful Universities, with an outstanding reputation for academic achievement and research. It was ranked first in the 2011 QS World University Rankings and its graduates have won more Nobel Prizes than any other university in the world. The University comprises more than 150 departments, faculties, schools and other institutions, plus a central administration and 31 independent and autonomous colleges.

The University and the Colleges are linked in a complex historical relationship. The Colleges are self-governing, separate legal entities which appoint their own staff.

They admit students, provide student accommodation and deliver small group teaching (supervisions). The University awards degrees and its faculties and departments provide lectures and seminars for students, determine the syllabi for teaching and conduct research.

There is much more information about the University at http://www.cam.ac.uk/univ/works/index.html, which we hope you will find helpful.

Department of Engineering

The Department of Engineering is the largest department in the University of Cambridge, representing approximately 10% of the University's activities by the majority of common metrics, and is one of Europe's largest integrated engineering departments. It achieves the highest standards in both research and teaching. Its international reputation attracts the best students, academics, sponsors and partners from around the world.

The Department seeks to benefit society by creating world-leading engineering knowledge that fosters sustainability, prosperity and resilience. We share this knowledge and transfer it to industry through publication, teaching, collaboration, licensing and entrepreneurship. By integrating engineering disciplines in one department, we can address major challenges and develop complete solutions, serving as an international hub for engineering excellence.

What the University can offer you

One of our core values at the University of Cambridge is to recognise and reward our staff as our greatest asset. We realise that it's our people who have built our outstanding reputation and that we will only maintain our leading position in the academic world by continuing to attract and retain talented and motivated people. If you choose to come and work with us, you will find that we offer:

- **Excellent benefits –** You will be eligible for a wide range of competitive benefits and services, including numerous discounts on shopping, health care, financial services and public transport. We also offer defined benefits pension schemes and tax-efficient bicycle, car lease and charity-giving schemes.

  We will help you balance your home and work life by providing you with generous annual leave entitlement and procedures for requesting a career break or flexible working arrangements if you need them. You will also have access to a range of well-being support services, including in-house Occupational Health and Counselling services. If you have childcare responsibilities, you may also benefit from the enhanced maternity/adoption pay, two nurseries and a holiday play scheme that we provide.

  We are keen to welcome new employees from other parts of the UK and other countries to Cambridge. If you will be relocating to Cambridge on a centrally funded appointment of two years or more, you may be eligible for our relocation expenses scheme. The University Accommodation Service will also be available to help you find suitable rented accommodation and to provide advice on renting arrangements and local facilities, if required. In addition, certain academic and academic-related appointments are eligible for the Shared Equity Scheme which

offers financial assistance with the purchase of living accommodation. You may find the pages at www.internationalstaff.ac.uk helpful in planning a relocation.

- **A welcoming and inclusive environment -** We will help you settle into your new role and working environment through a central University induction event, local induction activities and our online induction package. Where appropriate to your role, you will have a probation period to provide a supportive framework for reviewing your progress and discussing your training and development needs.

  If you are relocating to Cambridge, you and your family will be welcome to attend the Newcomers and Visiting Scholars Group, which provides an opportunity to find out more about Cambridge and meet other people new to the area.

- **Extensive development opportunities -** The encouragement of career development for staff is one of the University's core values. We put this into practice through various services and initiatives, including:
  - A wide-range of training courses and online learning packages.
  - The Staff Review and Development (SRD) Scheme, which is designed to enhance work effectiveness and facilitate career development post-probation.
  - Leave for career and personal development, including long-term study leave for assistant staff and sabbatical leave for academic staff.
  - The CareerStart@Cam programme, which supports assistant staff roles without higher education qualifications to develop their skills, experience and qualifications. Assistant staff may also apply for financial assistance for study which results in a qualification.
  - Reduced staff fees for University of Cambridge graduate courses.
  - The opportunity to attend lectures and seminars held by University departments and institutions.
  - Policies and processes dedicated to the career development of researchers and the implementation of the principles of the Concordat, which have led to the University being recognised with an HR Excellence in Research Award by the European Commission.

You can find further details of the benefits, services and opportunities we offer can be found in our CAMBens Employee Benefits web pages at http://www.admin.cam.ac.uk/offices/hr/staff/benefits/. A range of information about living and working in Cambridge is also available to you within the University's web pages at http://www.jobs.cam.ac.uk/ and http://www.admin.cam.ac.uk/offices/hr/staff/.

Equality of Opportunity at the University

We are committed to a proactive approach to equality, which includes supporting and encouraging all under-represented groups, promoting an inclusive culture and valuing diversity. We make selection decisions based on personal merit and an objective assessment against the criteria required for the post. We do not treat job applicants or members of staff less favourably than one another on the grounds of sex (including gender reassignment), marital or parental status, race, ethnic or national origin, colour, disability (including HIV status), sexual orientation, religion, age or socio-economic factors.

We have various diversity networks to help us progress equality; these include the Women's Staff Network, the Disabled Staff Network, the Black and Minority Ethnic Staff Network and the Lesbian, Gay, Bisexual and Transgender Staff Network. In addition, we were ranked in the top 100 employers for lesbian, gay and bisexual (LGB) staff in Stonewall's Workplace Equality Index 2013 and we hold an Athena

SWAN silver award at organisation level for promoting women in Science, Technology, Engineering and Medicine.

The Department is committed to promoting gender equality as part of a landscape of encouraging diversity, tolerance and a culture of mutual support. The dedicated Diversity Committee oversees equality, diversity and inclusion related activities in the Department, and holds regular events to promote Engineering to under-represented groups. The Department was first granted an Athena SWAN Silver Award in 2017, which was renewed in September 2020 to recognise the Department's ongoing commitment to advancing the careers of women in STEMM. The Department of Engineering continues to make excellent progress towards achieving gender balance amongst its staff and students. More information on the Athena SWAN Charter can be found here.

Information if you have a Disability

The University welcomes applications from individuals with disabilities and we are committed to ensuring fair treatment throughout the recruitment process. We will make adjustments to enable applicants to compete to the best of their ability wherever it is reasonable to do so, and, if successful, to assist them during their employment. Information for disabled applicants is available at http://www.admin.cam.ac.uk/offices/hr/staff/disabled/.

We encourage you to declare any disability that you may have, and any reasonable adjustments that you may require, in the section provided for this purpose in the application form. This will enable us to accommodate your needs throughout the process as required. However, applicants and employees may declare a disability at any time.

If you prefer to discuss any special arrangements connected with a disability, please contact, Kirsty Sylvester (kjs64@cam.ac.uk), who is responsible for recruitment to this position. Alternatively, you may contact the HR Business Manager responsible for the department you are applying to via hrenquiries@admin.cam.ac.uk.