

Research Assistant

SCHOOL OF ENGINEERING

Closing date: 28 January 2021

Interview date: TBC

Reference number: ENG163R



INTRODUCTION

Advanced technologies for restoring movement in people with spinal injuries

Functional electrical stimulation is a technology used to generate muscle contraction in muscles that have lost that ability due to lack of communication with the brain. When delivered in a coordinated way, electrical stimulation can be used to generate functional movement in otherwise paralysed limbs. The required stimulation pattern, however, is dependent on the exact nature of the injury, as well as the movement goals of the individual, and robust systems where these patterns are under the control of the user are not readily available.

This project is funded by the EPSRC grant 'Personalised approach to restoration of arm function in people with high-level tetraplegia' and aims to provide user-controlled stimulation that results in functional movement. We will use computational models specific to an individual's functional limitations to produce and test patient-specific interventions, based on functional electrical stimulation combined with mobile arm supports. For further details, see <https://gow.epsrc.ukri.org/NGBOViewGrant.aspx?GrantRef=EP/R035091/2>.

JOB DESCRIPTION

Main purpose of the role:

In this role, you will write code in Matlab or Python to enable collection and processing of biomechanical data for development and testing of electrical stimulation protocols for people with high-level spinal cord injury. You will work with the Principal Investigator and clinical collaborators to develop efficient software routines allowing protocol testing to take place, and to analyse and report the results from experimental and simulation data.

Key Responsibilities:

Software development: development of software to enable streaming and real-time processing of EMG data (Delsys Trigno system), efficient parameter adjustment of data collection and stimulation hardware, under the guidance of the principal investigator.

Biomechanical analysis: modification of biomechanical parameter files in OpenSim to reflect changes due to spinal cord injury, liaising with clinical colleagues; preprocessing of motion capture and EMG data to enable biomechanical simulations to be carried out; post-hoc analysis and reporting of simulation results.

Model and data sharing: preparation of biomechanical models and associated code for sharing with the wider scientific community, including documentation and test routines.

Dissemination: assisting with the preparation of manuscripts for publication and the presentation of work at scientific meetings.

AT A GLANCE:

SALARY:

£28,332 - £31,865 per annum

HOURS OF WORK:

Full time

CONTRACT TYPE:

Available until
06.10.21

CANDIDATE BACKGROUND

The successful candidate will have a background in biomedical engineering with experience of human subject measurement, biomechanical analysis, and software development. The role will require excellent skills in either Matlab or Python coding, and sound understanding of human movement biomechanics, and a good understanding of the wider clinical context of such assistive technologies. An ability to communicate effectively with technical and clinical collaborators as well as the patient community will be essential.

TERMS OF APPOINTMENT

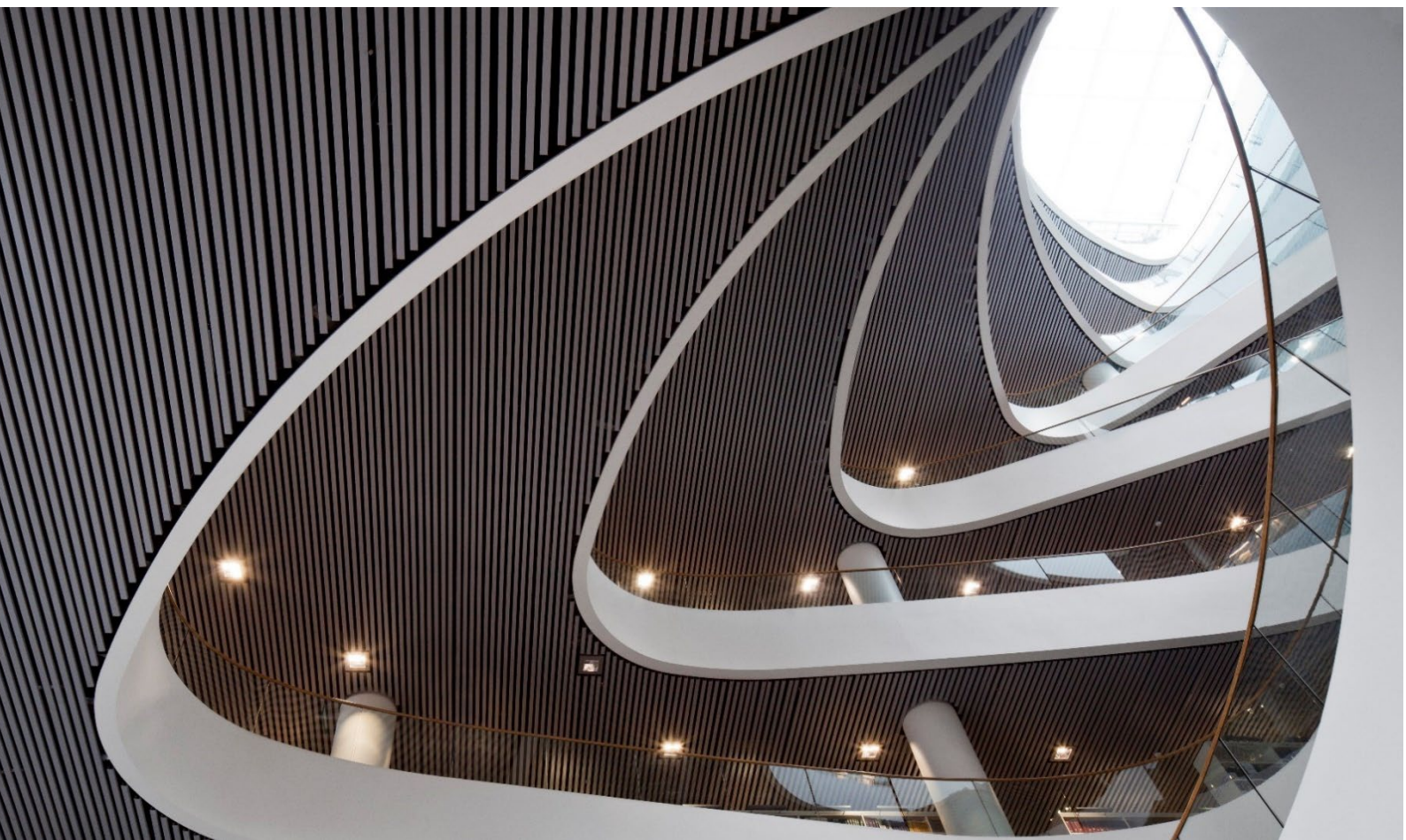
Salary will be at the appropriate point on the Grade 5 salary scale (£28,332 - £31,865 per annum) and negotiable with placement according to qualifications and experience.

As this post is funded by the EPSRC it is available until 06 October 2021.

Any appointment will be made subject to satisfactory references and a 12 month probation period.

For further information on various staff benefits and policies please visit <http://www.abdn.ac.uk/staffnet/working-here/>

This post does not meet the minimum requirements for visa sponsorship under the Skilled Worker Route. We are therefore unable to consider applicants for this post that require sponsorship to work in the UK.



PERSON SPECIFICATION

	<i>Essential</i>	<i>Desirable</i>
Education/Qualifications Academic, technical and professional education and training	MSc qualification or equivalent in Biomedical Engineering, Human Movement Science or similar.	
Work and Other relevant experience (including training) e.g. Specialist knowledge, levels of experience, supervisory experience, research	- Skills and experience in developing software code in Matlab and/or Python. - Experience with OpenSim biomechanical modelling software. - Experience in human movement analysis and processing of motion capture and electromyography data.	- Experience with Delsys Trigno EMG system - Experience with code sharing platforms such as Github. - Experience with clinical movement analysis.
Personal qualities and abilities	- Ability to work independently and with multi-disciplinary teams. - Excellent organisational, written and verbal communication skills. - Excellent interpersonal skills.	A clear understanding of the clinical context and needs of clinical and patient user groups.

UNIVERSITY OF ABERDEEN

Open to all and dedicated to the pursuit of truth in the service of others

Aberdeen is a broad based, research intensive University, which puts students at the centre of everything it does. Outstanding in a wide range of discipline areas, Aberdeen has also been credited for its international reach and its commercialisation of research ideas into spin out companies. The University has over 16,000 matriculated students and 3,600 staff representing 130 nationalities. We encourage bold thinking, creativity and innovation, and we nurture ambition with many opportunities for professional and personal development in an inclusive learning environment which challenges and inspires.

2019 HIGHLIGHTS

SCOTTISH UNIVERSITY OF THE YEAR (TIMES & SUNDAY TIMES)

70TH IN THE WORLD FOR RESEARCH CITATIONS (THE)

32ND IN THE WORLD FOR CONTRIBUTION TO THE UN SUSTAINABLE DEVELOPMENT GOALS (THE)

28TH MOST INTERNATIONAL UNIVERSITY IN THE WORLD (THE)

15TH EQUAL IN THE UK FOR OVERALL STUDENT SATISFACTION (NSS)

11TH BEST STUDENT INTAKE IN THE UK (TIMES & SUNDAY TIMES)

PERCENTAGE OF SCOTTISH INTAKE FROM MOST DEPRIVED AREAS UP FROM 4.5% IN 2018/19 TO 9% IN 2019/20

CURRENT CONTEXT

The University will build on the significant achievements above in 2020 and beyond. Underpinning our high performance and significant growth is a £100m investment in Aberdeen's estate which will include the completion of a new Science Teaching Hub, the regeneration of the historic King's Quarter, and a new Business School building. The University has also invested in 50 new academic posts, and 2020 will see the launch of 5 Interdisciplinary, cross-institution Research Centres that will catalyse world-leading research in our areas of research strength. The 5 Interdisciplinary Challenges are: Energy Transition; Social Inclusion and Cultural Diversity; Environment and Biodiversity; Data and Artificial Intelligence; and Health, Nutrition and Wellbeing.

The University of Aberdeen is a recent recipient of The Queen's Anniversary Prize, awarded to recognise world-class excellence in innovation and practical benefit to people and society. The University was given this award for health service research leading to improvements in academic and clinical practice and delivery of health care.

INTERNATIONAL

Aberdeen is also increasing its international presence, positioning the University as a global organisation, and building on its established partnership in Qatar with new partnerships in Sri Lanka, with the International Institute of Health Sciences, and in China, with Shanghai University and SCNU.

The University of Aberdeen is proud to be the first UK University to operate on a dedicated campus in Qatar. Phase 1 of this partnership with AFG College has successfully recruited over 600 students. Phase 2 will see the creation of a substantially larger campus, with capacity for at least 5,000 students and research activity. For further information on our Qatar campus, visit <https://www.abdn.ac.uk/qatar/>.



ABERDEEN 2040

On Founders' day in 2020, our 525th anniversary as a University, we launched our new strategy 'Aberdeen 2040'. Over the next 20 years, four strategic themes will shape our learning, discovery and strategic actions:

INCLUSIVE: We welcome students, staff and partners from all backgrounds, organisations and communities. We value diversity.

INTERNATIONAL: We connect with others and extend our networks and partnerships around the world. We think across borders.

INTERDISCIPLINARY: We innovate in education and research by generating, sharing and applying new kinds of knowledge. We learn together.

SUSTAINABLE: We understand and nurture our environment, and take care of our resources, including our people and our finances. We work responsibly.

OUR EDUCATION

Recognised as the Scottish University of the Year in the Times and Sunday Times Good University Guide 2019, we remain true to our roots as an ancient Scottish university, combining breadth and depth in our degree programmes and drawing strength from the quality of our research. Our flexible curriculum encourages students to grow as independent learners and therefore to thrive as graduates in the diverse workplaces of the future and become change-makers across the globe. Our education is open to all and we are setting ambitious targets to further widen access.

OUR RESEARCH

Researchers at the University of Aberdeen have been at the forefront of innovation and excellence throughout the centuries, generating insights in medicine, science, engineering, law, social sciences, arts and humanities. This research has contributed to five Nobel prizes as well as other awards such as the Queen's Anniversary prize. Our research is intellectually rigorous, working within our established areas of excellence as well as new methods of enquiry. We will continue to generate new knowledge addressing economic and societal issues with ambition and imagination, ensuring that it is globally excellent and locally relevant.

ABERDEEN AND ABERDEENSHIRE

With a population of approximately 230,000, the city stands between the Rivers Dee and Don. This historic city has many architectural splendours and the use of its sparkling local granite has earned Aberdeen the name of the Silver City. Recognised as the energy capital of Europe, Aberdeen nevertheless retains its old-fashioned charm and character making it an attractive place in which to live.

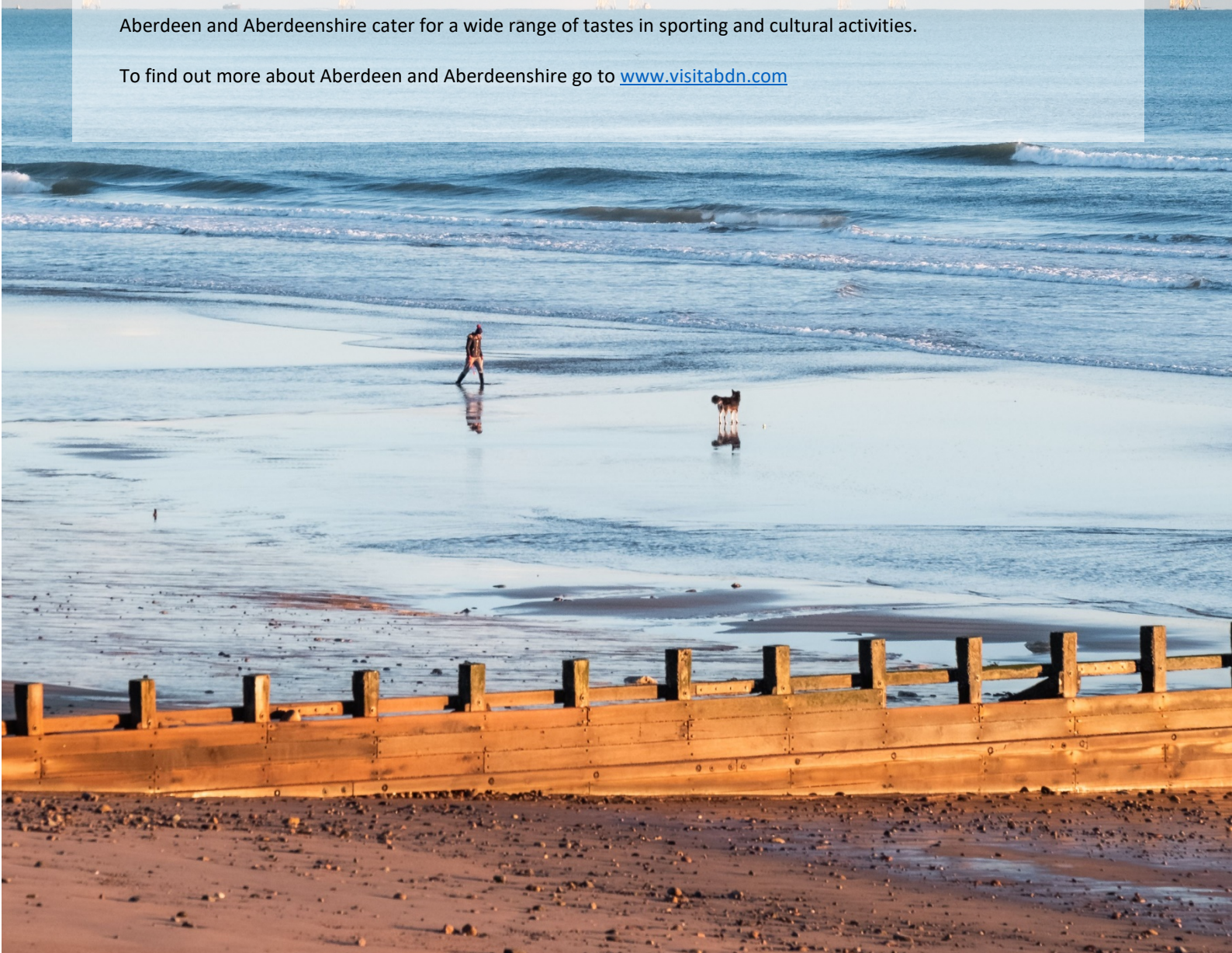
Aberdeen enjoys excellent communication services with other European cities - e.g. flying time to London is just over one hour with regular daily flights. There are direct air links to London (City, Heathrow, and Luton), Manchester, Birmingham, Leeds, Southampton, Belfast and East Midlands within the U.K. There are also flights to international hub airports: Amsterdam (Schiphol), and Paris (Charles De-Gaulle) as well as flights to other European destinations. <http://www.aberdeenairport.com> Road and rail links are also well developed.

The Grampian Region which took its name from the Grampian Mountains has a population of approximately 545,000. It is made up of five districts – Aberdeen, Banff & Buchan, Gordon, Kincardine & Deeside and Moray. The city and the surrounding countryside provide a variety of urban, sea-side and country pursuits. Aberdeen has first class amenities including His Majesty's Theatre, Music Hall, Art Gallery, the P&J Arena, Museums, and Beach Leisure centre. Within a short time, beach pursuits, equine activities, salmon, trout and sea fishing, hill-walking, mountaineering, golf, sailing, surfing and windsurfing can be reached. The city and the surrounding countryside are repeatedly given high ratings for quality of life in surveys.

Aberdeenshire is one of Scotland's most appealing regions. Royal Deeside and the Cairngorms National Park are within easy access of the city, and there are a variety of towns and villages scattered along the coastline.

Aberdeen and Aberdeenshire cater for a wide range of tastes in sporting and cultural activities.

To find out more about Aberdeen and Aberdeenshire go to www.visitabdn.com



EQUALITY & DIVERSITY

The University values a diverse working environment and recognises the benefits this can bring. The University is keen to receive applications from individuals from across all of the equality protected characteristics (age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex, sexual orientation).

The University supports opportunities for flexible working for a range of reasons and has policies in place to facilitate this. The policies can be found here: <https://www.abdn.ac.uk/staffnet/working-here/flexible-working--5607.php>

The University's commitment to gender equality has been recognised through the achievement of an Athena SWAN Bronze award at institutional level and across all its subject areas. The University is also a Stonewall Diversity Champion to further LGBT+ equality.

The University is signed up to Advance HE's Race Equality Charter, affirming the University's commitment to the charter's aim of improving the representation, progression and success of minority ethnic staff and students within higher education.

Candidates who are British Sign Language (BSL) user can contact us directly by using [contact SCOTLAND-BSL](#)

The University is delighted to be accredited as a [Disability Confident](#) employer and strives to ensure that disabled staff and students have the opportunity to work and study in an inclusive, accessible and supportive environment.

<https://www.abdn.ac.uk/staffnet/governance/equality-and-diversity-277.php>

HOW TO APPLY

Applications should include a curriculum vitae and personal statement of no more than two sides of A4, outlining your reasons for making an application.

Online application forms are available at www.abdn.ac.uk/jobs

The closing date for receipt of applications is **28 January 2021**

Should you wish to make an informal enquiry please contact:

Dr Edward Chadwick
Edward.chadwick@abdn.ac.uk

Please do not send application forms or CVs to Dr Chadwick.

Please quote reference number ENG163R on all correspondence