**Postdoctoral Researcher – Development of Open Source Software and Hardware Solutions for Improved Prosthetic Sockets Design**

**Science & Engineering, Engineering, Mechanical Engineering**

**Ref. No. NUIG-RES 121-22**

Applications are invited from suitably qualified candidates for a full-time fixed term position as a Postdoctoral Researcher with the Mechanical Engineering department at the National University of Ireland, Galway.

This position is funded through the Science Foundation Ireland (SFI) research centre [LERO](https://lero.ie/), and is available from 01/08/2022 to the contract end date of 01/06/2023.

This position is part of the SimuLimb project, which aims to create, deploy, and clinically evaluate, an open source experimental and computational framework for automated prosthetic socket design. The project features the acquisition of clinical data, such as limb shape and tissue mechanical properties, and to use this data in a computational framework for socket design. Next sockets are 3D printed and tested and clinically evaluated.

**Job Description:**

The successful candidate will work within the SimuLimb project and focus on software and hardware needed for the experimental data acquisition. In particular the successful candidate will develop and deploy an open hardware 3D digital image correlation system to capture limb shape and tissue deformation. These measurements allow other members of the research team to computationally design optimal prosthetic sockets. Once manufactured the sockets are tested at a local prosthetics clinic. Furthermore, to facilitate socket evaluation, the successful candidate will develop a skin pressure sensor system.

**Duties:**

* Improve [an existing system for limb shape and deformation imaging](https://doi.org/10.1109/ACCESS.2018.2843725) based on a circular configuration of Raspberry Pi cameras.
* Develop and validate a simple within socket skin pressure measurement system for socket load evaluation
* Work with clinicians to deploy and evaluate the imaging system on volunteers/patients in a clinical setting
* Development of software for control of the imaging and sensor systems
* Publication of scientific outputs such as: research articles, open data, open source software, and open hardware.
* Provide mentorship to PhD students within the research group
* Actively participate in national/international conferences and meetings

**Qualifications/Skills required:**

**Essential Requirements:**

* A primary degree and Ph.D. in Biomedical Engineering, Mechanical Engineering, Electrical Engineering, or a closely-related discipline.
* A strong commitment to principals of open science
* Experience with programming languages such as MATLAB, Python, and Julia.
* Excellent communication and organizational skills.

**Desirable Requirements:**

* Experience with Raspberry Pi and/or Arduino, and other embedded electronics and sensor systems
* Hands-on electronics development skills
* Experience with Computer Aided Design (CAD) software
* Experience with 3D printing
* Knowledge of soft tissue biomechanics
* Experience in open source software development
* Experience with the Julia programming language
* Experience with the Ubuntu operating system

**Salary**: €39,523 per annum pro rata for shorter and/or part-time contracts (public sector pay policy rules pertaining to new entrants will apply).

**Start date**: Position is available from August 2022

**Continuing Professional Development/Training**:

Researchers at NUI Galway are encouraged to avail of a range of training and development opportunities designed to support their personal career development plans.

Further information on research and working at NUI Galway is available on [Research at NUI Galway](http://www.nuigalway.ie/our-research/)

For information on moving to Ireland please see [www.euraxess.ie](http://www.euraxess.ie/)

Informal enquiries concerning the post may be made to Dr Kevin Moerman (kevin.moerman@nuigalway.ie).

**To Apply:**

In order to apply please submit a cover letter, a CV, and the contact details of three referees. All documents should be sent in PDF format only to: **Dr Kevin Moerman**, kevin.moerman@nuigalway.ie. Please put reference number **NUIG-RES 121-22** in the subject line of your e-mail application.

**Closing date for receipt of applications is 5.00 pm 10/06/2022**

**Optional: Interviews are planned to be held between 27/06/2022 and 11/07/2022**

We reserve the right to re-advertise or extend the closing date for this post.

National University of Ireland, Galway is an equal opportunities employer.

All positions are recruited in line with Open, Transparent, Merit (OTM) and Competency based recruitment

'NUI Galway provides continuing professional development supports for all researchers seeking to build their own career pathways either within or beyond academia.  Researchers are encouraged to engage with our Researcher Development Centre (RDC) upon commencing employment - see [www.nuigalway.ie/rdc](http://www.nuigalway.ie/rdc) for further information.'

