

Research Assistant for designing and 3D printing novel wrist splints for wrist ailments (Fixed-term for 6 months)

Job Ref: REQ180796

As part of the University's ongoing commitment to redeployment, please note that this vacancy may be withdrawn at any stage of the recruitment process if a suitable redeployee is identified.

Project Description

The project is based on existing research by the Principle Investigator, Dr Abby Paterson, funded by Arthritis Research UK. The project focuses on the development and validation of new, novel 3D Printed splints for a range of wrist conditions such as rheumatoid arthritis. The intention of the project is to review current practices in hand therapy departments, whilst looking at the emerging research and commercial work involving 3D Printing, to identify new and innovative solutions to help both clinicians and patients.

A Research Assistant (RA) is required by the Design School's *Design for Digital Fabrication (D4DF)* Research Group to investigate current state-of-the-art in the use of digital fabrication methods (e.g. 3D Printing/Additive Manufacture) for the provision of custom-made wrist splints. The RA will need to carry out preliminary research (e.g. a literature review) into current and emerging Additive Manufacturing technologies, as well as existing uses of these technologies for making custom-made splints and other exoskeletal devices. Using this knowledge, they will engage with hand therapists who are already linked with the study, to identify new opportunities for wrist splints, but also digit (finger) splints. The RA will then generate a Design Brief for each new splint design followed by a range of concepts developed with sketches and Computer Aided Design (CAD) and will be asked to make a range of prototypes (from low to high fidelity). The RA will also be expected to evaluate the prototypes with hand therapists to refine the designs further. The final designs will be used to promote the Arthritis Research UK project, and will be used for a range of marketing activities for the benefit of the Design School, Arthritis Research UK and the NHS. In addition, the prototypes will be used to provide visual information on follow-on funding applications to support the need for further research into the use of 3D printing and CAD in the context of upper extremity splinting within the NHS.

Job Description

Job Grade: Specialist and Supporting Academic Grade 5

Job Purpose

To conduct preliminary research into current and emerging Additive Manufacturing technologies for making custom-made splints and other exoskeletal devices. Using this knowledge, they will generate a design brief and prototypes. Your studies will assist with the investigation of 3D Printing of custom-made wrist splints through guidance from researchers at Loughborough University and clinicians working in the NHS.

Job Duties

- To assist the Principle Investigator (Dr Paterson) to design, organise and undertake research for the outlined project with specific focus on understanding the needs of the patient, the hand therapists, and the healthcare provider (the NHS).
- To visit a London-based hand therapy department and observe hand therapy clinic duties
- To evaluate current splinting practices and identify areas for design changes and opportunities
- To support the design, manufacture, and test a range of 3D Printed splints (including wrist and finger splints)
- To document any design work, using logbooks, CAD models, and low to high fidelity prototypes

- To review previous literature and newsfeeds on existing and emerging uses of Additive Manufacturing/3D Printing for custom-fitting wrist splints and any other exoskeletal medical devices.
- To attend meetings and other events appropriate to the project and contribute to progress reports as required.
- To assist project investigators in preparing reports and papers for presentation at national and international conferences where appropriate.
- To assist project investigators in preparing original work for submission to peer-reviewed journals.
- To work with the other members of the research team (D4DF research group, Loughborough University), or associated project partners when appropriate.
- To liaise with suppliers of essential and auxiliary equipment deemed critical for the undertaking of the research activities outlined within the project.
- To review on a continuous basis any relevant developments reported in the scientific and technical literature.
- To comply with and be sensitive to relevant Data Protection issues and protocols/processes for the University, the NHS Hand Therapy Department, but also any other overarching regulations such as GDPR. The post holder may be exposed to confidential patient data during observation studies.
- To pursue excellence and maintain high standards of safety in all activities.
- You will need to be able to travel independently to and from the London-based Hand Therapy department.

General and administrative

- With direction from the Principle Investigator, undertake research activities (e.g. interview, questionnaire) and assist with the studies, individually or with others as appropriate.
- With direction from the Principle Investigator, formulate detailed plans for the project.
- To feed back to the project team on progress, to make recommendations for next steps.
- Write up a progress report and present outcomes to all Investigators and Collaborators.
- Travel to attend meetings and make presentations both within the project partners working group and to external stakeholders.
- To support the project team by enhancing relationships with existing collaborators and by assisting the establishment of relationships with new collaborators.
- To contribute to research papers suitable for publication in high quality academic journals.
- To contribute to project promotion and public engagement events.
- To contribute to ideas for new research and enterprise directions.
- Maintain confidentiality at all times and ensure that Intellectual Property (IPR) agreements are not violated, and that patient confidentiality is maintained in line with the University and NHS Data Protection procedures.
- Potential to assist the academic staff in the project team with the supervision of undergraduate MSc and PhD project work and day-to-day supervision and support of other researchers.
- Potential to assist academics with delivering teaching, tutorial and laboratory sessions to students.
- Engage in training programmes in the University (or elsewhere) that are consistent with the needs and aspirations of the project and those of the Department and the University.
- Undertake other duties as may be reasonably requested and that are commensurate with the nature and grade of the post.

Points To Note

The purpose of this job description is to indicate the general level of duties and responsibility of the post. The detailed duties may vary from time to time without changing the general character or level of responsibility entailed.

Special Conditions

All staff have a statutory responsibility to take reasonable care of themselves, others and the environment and to prevent harm by their acts or omissions. All staff are therefore required to adhere to the University's Health, Safety and Environmental Policy & Procedures.

All staff should hold a duty and commitment to observing the University's Equality & Diversity policy and procedures at all times. Duties must be carried out in accordance with relevant Equality & Diversity legislation and University policies/procedures.

Successful completion of probation will be dependent on attendance at the University's mandatory courses which include Respecting Diversity and, where appropriate, Recruitment and Selection.

Organisational Responsibility

Reports to the Dr Abby Paterson.

Person Specification

Your application will be reviewed with respect to meeting the essential and desirable criteria listed below. Your application will be reviewed against the essential and desirable criteria listed below. Applicants are strongly advised to explicitly state and evidence how they meet each of the essential (and desirable) criteria in their application. Stages of assessment are as follows:

1 – Application

2 – Interview

Essential Criteria

Area	Criteria	Stage	
Experience	Current or recent work experience using 3D Computer-Aided Design (CAD)	1,2	
	Some experience of Additive Manufacturing/3D Printing processes	1,2	
	Knowledge and experience in Industrial/Product/Engineering Design and the design process	1,2	
Skills and abilities	Ability to coordinate project activities, manage project tasks, prioritise and meet deadlines	1,2	
	Excellent written, visual, and oral communication skills	1	
	Self-motivated with ability to meet deadlines	1,2	
	Excellent interpersonal, and organisational skills	1,2	
	Working knowledge of CAD software packages such as SolidWorks, Creo, Rhino 3D etc.	1,2	
	Ability to contribute to project reports and make technical presentations to industrial and academic research groups	1,2	
	Excellent IT skills, including MS Office applications	1,2	
	Knowledge of relevant Health & Safety issues	1,2	
	Training	Demonstrate evidence of having undertaken further training	1,2
	Qualifications	An outstanding educational profile up to and including first degree and / or Masters in a relevant Industrial / Product / Engineering Design discipline	1,2
Other	Commitment to observing the University's Equal Opportunities policy at all times.	1,2	
	A willingness and ability to travel	1	

Desirable Criteria

Area	Criteria	Stage
Experience	Prior experience with using 3D scanners and processing 3D scan data specifically surface/mesh modelling	1,2
	Ability to undertake qualitative and quantitative analysis (basic level) of data	1,2
Skills and abilities	A strong academic track record in product/industrial design	1
Qualifications	Holds (or near to completing) a 2.1 Degree in a relevant product design/design engineering/additive manufacturing discipline	1
Other	A keen interest in medical product design	1

Conditions of Service

The position is full-time and fixed term for 6 months. Salary will be on Specialist and Supporting Academic Grade 5, (£24,771 to £29,515) per annum, at a starting salary to be confirmed on offer of appointment. Subject to annual pay award.

The appointment will be subject to the University's normal Terms and Conditions of Employment for Grades 1 to 5 staff, details of which can be found [here](#).

The University is committed to enabling staff to maintain a healthy work-home balance and has a number of family-friendly policies which are available at <http://www.lboro.ac.uk/services/hr/a-z/family-leave-policy-and-procedure---page.html>.

We also offer an on-campus nursery with subsidised places, subsidised places at local holiday clubs and a childcare voucher scheme (further details are available at: <http://www.lboro.ac.uk/services/hr/a-z/childcare-information---page.html>)

In addition, the University is supportive, wherever possible, of flexible working arrangements. We also strive to create a culture that supports equality and celebrates diversity throughout the campus. The University holds a Bronze Athena SWAN award which recognises the importance of support for women at all stages of their academic career. For further information on Athena SWAN see <http://www.lboro.ac.uk/services/hr/athena-swan/>

Applications

The closing date for receipt of applications is **19 October 2018**.