

Research Associate: Haptic robotic arm system

Department	Design, Manufacture and Engineering Management (www.strath.ac.uk/dmem/)		
Faculty	Faculty of Engineering (www.strath.ac.uk/engineering/)		
Staff Category	Research	Reference No	53717
Reports To	The Head of Department through the Project Leader	Grade:	7
Salary Range:	£31,076 - £38,183	Contract Type:	Fixed Term (36 months)
FTE:	1	Closing Date	Tuesday, 3 January 2017

Job Advert

The Space Mechatronic Systems Technology Lab within the Department of Design, Manufacture and Engineering Management is seeking to recruit a Research Associate in Haptic robotic arm system design for application within a range of environments and applications including satellite applications and space mechatronic systems development. The Associate will work as part of a team on a robotic project funded by the European Commission and an Overseas' funder. The team comprises of both University and Industry staff. It is expected that this work may also be expanded into mechatronic system development for CAD system and other applications.

The Associate will research existing relevant haptic robotic arm technology and systems; thoroughly investigate the innovative systematic approach using these systems or solutions for as many as innovative applications, e.g. CAD system interaction and human robotic interaction challenges in factory assembly simulations and other industrial sectors. The role will require the Associate to work with CAD models of engineering parts, robotics and haptic /robotic controller.

To be considered for the role, you will be educated to a minimum of PhD level within a relevant discipline, or you will have relevant industrial experience in addition to a relevant Degree. You will have experience of haptics, robotics, CAD or robotic arm systems or other system design, or mechatronic system development and you will have experience of advanced design skills in system integration of CAD, robotic hand/arm and visualisation systems. You will have an ability to write reports and you will have sufficient breadth and/or depth of knowledge in robotic hand, manipulator systems design, integration and construction. You will have excellent interpersonal and communication skills, with an ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences and have an ability to work autonomously and as part of a multi-disciplinary and/or cross-disciplinary team.

Whilst not essential for the role, applications are welcomed from candidates with: experience in industrial robotics; experience of building and integrating robotic controller, with robotic hand and vision based tracking system, within an industrial environment; and/or broad knowledge of control programming and manipulation in developing their support systems. Candidates with industrial experience and space research are also welcomed.

Job Description

Brief Outline of Job:

To undertake research activities as part of a team, working on a new industry-focused research contract in the area of robotics development for agriculture applications, under the general guidance of a research leader. To engage where required in relevant teaching, professional and knowledge exchange activities; and input to administrative activities.

Main Activities/Responsibilities:

1.	Independently conduct literature and market reviews of relevant automation systems.
2.	Based on the market investigation on haptic control and human interaction from the companies, design and develop an innovative haptic robotic hand control system, which can be used to control manipulation of CAD models in a virtual environment. It is intended that these integrated solutions will have step change to many remote manipulation operations. Initially, it might be necessary to work on some commercial systems.
3.	Lead and guide the development of working prototypes for controlling a haptic device to interact with the CAD model.
4.	Develop necessary software modules for fast human haptic hand interaction.
5.	Design, prototype and test a new solution and equipment.
6.	Manage and prioritise own workload within agreed objectives to ensure that all activities are completed to deadlines.
7.	Manage Research Assistants and project students, as required, including ensuring delivery to set deadlines, and help with sourcing research funding and contributing to research grant applications.
8.	Write up results of own research and contribute to the production of research journal publications and reports.
9.	Contribute to the research proposal development and planning of research programmes as required and join mechatronic network for research result dissemination.
10	Assist with the supervision of student projects and the delivery of introductory classes as required.
11	Input as a team member to Department/School, Faculty and/or University administrative activities.
12	Feeding research into teaching and engage in continuous professional development.

Person Specification

Educational and/or Professional Qualifications

(E=Essential, i.e. a candidate must meet all essential criteria to be considered for selection, D=Desirable)

		Assessment Method
E1	Good Honours degree in mechatronics, control, automation, mechanical engineering, manufacturing, electronic and/or mechanical engineering or other appropriate discipline	Application/ CV
E2	A PhD in a relevant area or relevant industrial experience in mechatronic systems, mechanisms of development or control, automation and/or space mechanisms within industry	Application/ CV
D1	Membership of relevant Chartered/professional bodies (including Higher Education Academy)	Application/ CV

Experience

E3	Experience of mechatronics, CAD programming, controller design, automation or mechatronic system development or mechanism development	App/CV/ Interview
E4	Experience of 3-dimensional modelling and control block diagram modelling and simulation	Interview
D2	Experience of building and integrating haptic equipment within an industrial environment or general experience in developing mechatronic systems	App/CV/ Interview

Job Related Skills and Achievements

E5	Ability to write both high level and lower level programs to control haptic devices and tracking visual signals	Application/ CV
E6	Skilled in developing control code to drive mechanisms and mechatronic structures for human interaction, automation applications or other mechatronic system applications in manufacturing	Interview
E7	Sufficient breadth or depth of knowledge in haptic robotic systems, automation or mechatronic system development to effectively contribute to the research programme	Interview
D3	Broad knowledge of Mechatronic Systems, mechanism modelling and simulation and the challenges in developing their support systems	Interview

Personal Attributes

E8	Excellent interpersonal and communication skills, with the ability to listen, engage and persuade, and to present complex information in an accessible way to a range of audiences	App/CV/ Interview
E9	Ability to work independently and as part of a multi-disciplinary and/or cross-disciplinary team	Interview

E10 Ability to work under pressure and driven to deliver results	Interview
E11 Open and willing to undertake new challenges	Interview
E12 Resourceful and collaborative with others and take leadership in working with research assistants and project students	Interview
Other Relevant Factors	
D4 Full, clean UK Driving Licence with access to own transport	Interview

Application Procedure

Applicants are required to complete an application form including the name of three referees who will be contacted before interview without further permission, unless you indicate that you would prefer otherwise. Applicants should also submit a Curriculum Vitae and a covering letter detailing the knowledge, skills and experience you think make you the right candidate for the job. Applicants should also complete the Equal Opportunities Monitoring Form.

Other Information

Further information on the application process and working at Strathclyde can be found on our website (<http://www.strath.ac.uk/hr/workforus>).

Informal enquiries about the post can be directed to Professor Xiu T Yan, Director of SMeSTech lab (x.yan@strath.ac.uk/0141 548 2852).

Probation

Where applicable, the successful applicant will be required to serve a 9 month probationary period.

Pension

The successful applicant will be eligible to join the Universities' Superannuation Scheme. Further information regarding this scheme is available from [Payroll and Pensions](#).

Interviews

Formal interviews for this post will be held in January 2017.

Equality and Diversity

We value diversity and welcome applications from all sections of the community.

The University currently holds a Bronze Athena SWAN award, recognising our commitment to advancing women's careers in science, technology, engineering, maths and medicine (STEMM) employment in academia.



Conditions of Employment

Research Staff

1. GENERAL CONDITIONS

Members of staff are subject to the Charter and Statutes and the Ordinances and Regulations of the University, published in the Calendar, and to any amendments or additions thereto approved by the University Court and, in the case of the Charter and Statutes, the Privy Council. Staff are also expected to familiarise themselves with, and adhere to, general University policies and procedures, as published on University web pages.

The University Court recognises Strathclyde Universities and College Union (SUCU) as the sole body with which it will negotiate and consult on all collective issues concerned with the terms and conditions of employment of Research Staff. Such terms and conditions may be varied by the University Court after negotiation and consultation with SUCU.

Each member of staff is responsible for the proper performance of allocated duties to the person or persons specified in the member of staff's letter of appointment and any accompanying papers.

The University is committed to ensuring that its business is conducted in an open and transparent manner and will take all appropriate steps to address risks of bribery or corruption. Members of staff are required at all times to act honestly and with integrity and to safeguard the resources for which they are responsible. The University has in place a robust Public Interest Disclosure (Whistleblowing) Policy to enable concerns to be brought to its attention. This is available at www.strath.ac.uk/publicinterestdisclosure. Other relevant policies, e.g. Fraud Prevention and Conflicts of Interests, can also be found on the University's website.

Any member of staff may at any time be exposed to commercially sensitive information, information related to potentially valuable intellectual property or information which may otherwise be of a confidential nature. This information, which could be found anywhere in the University, may be written or disclosed orally, can include information of a commercial or technical nature, and may be owned by the University or by third parties. The University requires all employees to keep any such information confidential in the first instance and not disclose, publish or otherwise disseminate it without prior consent of the University. Such confidentiality obligations are commonplace and in the commercial interests of the University. When in doubt advice should always be sought from Research and Knowledge Exchange Services prior to disclosure.

The University operates probationary periods for new staff, the duration of which will be specified in individual letters of appointment. The normal probation period for posts in this staff category is 9 months for those at grades 6 and 7, and 12 months for grades 8 and above. Further guidance on probationary procedures is published at <http://www.strath.ac.uk/staff/policies/hr/>.

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Further information on the terms and conditions specified in this document and other staffing policies and procedures can also be found at www.strath.ac.uk/hr.

2. SALARY

Appointments are made at an appropriate salary point on the University's grading structure, with initial placing determined according to qualifications and experience. Increments are paid to staff on the 12 month anniversary of their appointment. Where this is not the first of the month, the increment will be paid on the first of the month directly

after the 12 month anniversary. This allows 1 progression to the next point on the salary scale until the top guaranteed point of the scale is reached.

Salaries are paid directly to staff members nominated bank account, normally on the second last working day of the month.

3. HOURS OF WORK

Working time is that required to fulfil the duties of the post. The University Court recognises that research staff carry out these duties in a variety of ways appropriate to the nature of the research activity, but expects regular contact to take place between the research staff employee and the supervisor/granholder (where these positions are occupied by different individuals) during normal working hours on week days. There are exceptions to this pattern which may involve contact at other locations or in the evenings, or at weekends, but these arrangements will be made with the agreement of the member of staff concerned.

Duties may, by arrangement with Head of Department/School/Director, include some teaching associated with the post (up to a maximum of 40 hours per semester) for which no additional payment will be made.

Additional work which does not fall within the scope of that described above may by arrangement attract payment which must be authorised and processed through the payroll.

4. HOLIDAYS

Annual leave entitlement is 31 days per year to be taken by agreement with the line manager. For staff members working on a part-time basis, holidays will be calculated on a pro-rata basis.

In addition to annual leave there is an entitlement to eleven public holidays per year which should be taken on days that the University is closed for this purpose. The University presently closes for four additional days over the Christmas and New Year period. **These additional days count against the annual leave entitlement.**

For staff members working on a part-time basis, public holiday entitlement will be calculated on a pro-rata basis.

Annual leave and public holiday entitlements should be taken in the leave year to which they relate. Up to five days leave can be carried forward into the new leave year subject to line management agreement. In exceptional circumstances, Heads of Department/School/Director may approve carry forward of accrued annual leave in excess of five days.

The University's expectation is that staff take all accrued holidays prior to their termination date. If staff have exceeded their entitlement the University will deduct an equivalent number of days pay from final salary payments.

5. SICKNESS ABSENCE

During any period of absence through illness or injury provided the appropriate notification and certification procedures have been followed the University will pay a member of staff (having taken account of the aggregate of all periods of absence due to illness during the twelve months immediately preceding the first day of the current absence) as follows:

Period of Continuous Employment at start of absence from work	Full Pay	Half Pay
Less than 1 year	1 month	1 month
1 year but less than 2 years	2 months	2 months
2 years but less than 3 years	4 months	4 months
3 years but less than 5 years	5 months	5 months
5 years or more	6 months	6 months

In order to manage the University's sick pay scheme the University requires to maintain sickness absence records on individual members of staff. When making payments after the expiry of statutory sick pay the University will deduct an amount equivalent to any benefit normally payable by the Department of Work and Pensions. For full details on the general University policy in this area please refer to the Sickness Absence Management Policy at www.strath.ac.uk/staff/policies/hr.

6. PENSIONS

New members of staff, aged under 75, will be admitted automatically to membership of the Universities Superannuation Scheme (USS) on taking up appointment. If you are already in receipt of a USS pension you will join USS in accordance with pension auto-enrolment regulations. USS requires a contribution from the member, currently 8 per cent of pensionable salary. A contribution, currently 18 per cent of pensionable salary, is paid by the University. From 1 April 2016 all members are part of the career revalued benefits scheme called the USS Retirement Income Builder. From 1 October 2016 a threshold, initially of £55,000 a year, will apply to the maximum salary that counts towards the USS Retirement Income Builder. From the same date a new defined contribution section of the scheme called USS Investment Builder will open and any contributions above the threshold will be invested in this section. The exception to automatic membership of the pension scheme applies if your post is located out with the UK in an EU member state. If this is the case membership of USS is not available to you.

New members of staff may opt out of USS within three months of taking up appointment and will then be treated as if they had never been a member of the scheme. After three months members of staff who wish to withdraw from USS during their employment will be required to give a minimum of 28 days' notice in writing to the University. Any member of staff who wishes to opt out should contact the Pensions Section, Finance, in the first instance (pensions@strath.ac.uk). Please note that if you are a member of Pensions Plus and withdraw from USS with less than two years of membership, or cease employment with the University and have less than two years of USS membership, the option of a refund of pension contributions will not be available to you. Instead, USS must provide you with a pension benefit that is payable from your retirement date.

The University reserves the right to alter or withdraw Pensions Plus as it sees fit or as required to comply with legislative changes. Withdrawal or amendment of Pensions Plus will not affect your membership of USS. If you do not wish to participate in Pensions Plus but wish to remain in the pension scheme please contact the Pensions Team who will provide you with a non-participation form.

Information regarding pension scheme membership can be found on the Pensions pages of the University's website. Full information regarding USS can be found on the USS website – www.uss.co.uk

7. PLACE OF WORK AND RESIDENCE

Members of staff will be based on the John Anderson Campus, unless otherwise stated in the letter of appointment. The Department/School in which the post is initially placed will be specified in the letter of

appointment although there will be an expectation to work at such other places as required in the course of employment.

If the need arises for members of staff to work outside the UK for a period (or periods) of more than one month then such arrangements will be subject to mutual agreement. Members of staff would then be provided with a statement in advance setting out the terms covering such periods of employment.

The University does not normally place specific restrictions upon the place of residence of members of staff. All staff are, however, expected to reside in a location which is compatible with the satisfactory fulfilment of all the duties associated with their appointment.

8. CONSULTANCY/FURTHER ACTIVITIES

To support the strategic objectives of the University and to facilitate individual professional development, the University encourages staff to engage in professional activities with outside bodies related to their field of work. In many cases, such activity will be approved on the basis that it represents University knowledge exchange activity and should therefore be treated as part of the individual's overall workload and managed through the University's systems. It is also recognised that there will be some cases where an activity is entirely separate from the University and should thus be notified/approved as a personal business activity. For further information please refer to the "University Procedure in relation to Work for Outside Bodies including Consultancies", which forms part of the employment contract and can be accessed at www.strath.ac.uk/hr

9. DISCIPLINARY AND GRIEVANCE PROCEDURES

Further information on the University's disciplinary and grievance procedure can also be found at www.strath.ac.uk/policies/hr or on request from Human Resources.

10. NOTICE AND TERMINATION

Members of staff are employed on the conditions indicated in individual letters of appointment and any accompanying papers. The University is not obliged to give notice of termination or continue any employment beyond the end of that period. Where the period of the contract of employment is for one year or less it may be terminated short of the fixed term period by one months notice on either side. Where the period of the contract of employment is for more than one year, or where there have been a further contract or series of contracts immediately consecutive, the employment may be terminated short of the fixed term period by three months' notice on either side, except during the probationary period when the notice period is one month.

If the appointment is for a fixed term it will expire at the end of the period without the necessity for notice.

Revised April 2016