Post Title: Research Fellow in Robotics
School/department: School of Engineering and Informatics
Hours: full time. Requests for flexible working options will be considered (subject to business need).
Contract: fixed term for 24 months
Reference: 3340
Salary: starting at £33,797, rising up to £40,322 per annum
Placed on: 21 February 2020
Closing date: 24 March 2020. Applications must be received by midnight of the closing date.
Expected start date: 30th April 2020 or soon after

We are looking for a Research Fellow (post-doctoral researcher) at the School of Engineering and Informatics of the University of Sussex, to work in the area of physical human-robot interaction and robotic control.

The research fellow will be part of an EPSRC New Investigator Award investigating human-robot interaction by using differential game theory and its application in robot-assisted physical training.

Our vision is to develop a unified framework to analyse various interaction behaviours, and more importantly, to design a robot controller to achieve natural and efficient human-robot interaction. The research fellow will undertake most of the work in the modelling of human-robot interaction, development of the robotic controller and design of the physical robot-assisted training system based on a robotic platform in our group.

Within this project, the Research Fellow will be expected to

1. extend existing algorithms used in our group and develop a game theory framework with estimation of the human partner’s controller;
2. combine game theory controller and system observer to yield a stochastic game theory controller for physical human-robot interaction;
3. design a robotic interface for upper limb physical training and demonstrate advantages of the stochastic game theory controller in improving the training system and predicting human behaviours;
4. explore the use of the stochastic game theory controller for other applications of physical human-robot interaction such as collaborative object manipulation and exoskeleton;
5. publish these results in scientific venues and help in grant applications;
6. help in supervision of undergraduate and postgraduate students and teaching of related units.

The position would be suitable for someone with broad knowledge and experience in the area of robotics and control with good skills in programming and hands-on implementation.
The research fellow will have considerable freedom in shaping the nature of the research project. We seek a highly organised and motivated individual able to multi-task and work independently with minimal supervision while maintaining excellent attention to detail and bring energy and enthusiasm to a fast growing research group. Excellent written and communication skills are also essential.

The group is led by Dr Yanan Li and hosts 1 PhD student, 1 exchange PhD student, ~3 Masters students and ~6 final year students each year. The group is in close collaborations with academics and industries, including NUS, NTU and A*STAR in Singapore, Imperial College, TUM, etc. The work of group members often attracts media attention and offers many public engagement opportunities.

Employment will be subject to the right to work in the UK. You will work directly with Dr Yanan Li, with a base in the Department of Engineering and Design. You can find more information about Dr Li at http://www.sussex.ac.uk/profiles/421198.

For informal inquiries please contact Dr Li, Department of Engineering and Design, University of Sussex, Falmer, Brighton BN1 9RH, UK; yl557@sussex.ac.uk.

For full details and how to apply see our vacancies page

The University of Sussex values the diversity of its staff and students and we welcome applicants from all backgrounds.

2. The School / Division

The School of Engineering and Informatics covers the disciplines of computer, electrical and electronic engineering, mechanical, and automotive engineering, product design, digital media, computer science and informatics.

Distinctive characteristics of the School are: creativity, interdisciplinarity, strong links with industry, and an international outlook in both research and teaching. £10m (£4.9m from HEFCE) is being invested in a new Computing, Robotics, Electronics and Mechatronics Centre (CREaM) as a result of a 60% surge in applications for the School’s degrees.

The School offers a range of undergraduate and postgraduate degrees in its areas of expertise, often in collaboration with other schools at Sussex, to create a distinctive focus that addresses the needs of industry, commerce and society. Examples include joint degrees with the MSc in Evolutionary and Adaptive Systems (EASy) that includes modules from the Schools of Engineering and Informatics and Psychology; and the MScs in Engineering Business Management, and Management of Information Technology, which were developed in collaboration with the School of Business, Management and Economics.

This interdisciplinary approach also applies to our research, with current and recent externally funded projects with researchers in a wide range of other subject areas including: geomorphology, media practice, medical imaging, neuroscience, anthropology, English literature, epidemiology, geography, international development, mathematics, psychiatry, psychology and sociology.

The School has strong links with industry, and has an established Strategic Advisory Board.

Innovative research across the School has led to a number of patents which are being commercialised including: novel electric potential sensors (EPS) licensed to Plessey Semiconductors and marketed as the EPIC sensor chip; and University spin-out companies, including TribeHive, which is deploying delay-tolerant networking to provide smartphone connectivity in large crowds, and TexRAD, which has developed software for the analysis of medical images and has recently demonstrated the ability to detect brain texture anomalies.
in Asperger’s Syndrome patients. These developments have been supported by the University’s Enterprise fund. The EPS sensor technology was awarded the IET Innovation award for ‘Measurement in Action’, and was shortlisted for two other IET categories and for a THES award.

The School is, for administrative purposes, comprised of two departments: the Department of Engineering and Design, and the Department of Informatics. Staff teach across the School, and undertake research on cross-School, as well as cross-University projects.

The Department
Please find further information regarding the Department at http://www.sussex.ac.uk/engineering/

3. Job Description

Job Description for the post of: Research Fellow in Robotics

Department: Engineering and Design

Section/Unit/School: Engineering and Informatics

Location: University of Sussex, Falmer Campus

Grade: Research Fellow, Grade 7

Responsible to: Principal Investigator through to Head of School

Responsible for: n/a.

Research Fellow I is an early career-grade research position. Post-holders will be expected to contribute to the work of the research team, and also to develop their research skills with support from more experienced members of staff.

4. Person Specification

ESSENTIAL CRITERIA

1. Normally educated to doctoral level, or other equivalent qualification, or appropriate level of experience, as appropriate to the discipline (see role-specific criteria below).

2. Evidence of engagement in high-quality research activity.

3. Excellent presentation skills, with the ability to communicate effectively, both orally and in writing, with students, colleagues and external audiences.

4. Ability to work individually on own initiative and without close supervision, and as part of a team.

5. Ability to exercise a degree of innovation and creative problem-solving.

6. Excellent organisational and administrative skills.
7. Ability to prioritise and meet deadlines.
8. Excellent IT skills.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. Knowledge in physical human-robot interaction, robotics and control.
2. Strong mathematical background (linear algebra, calculus).
3. Programming experience with high performance (Matlab, LabView, C#).
4. Experience with building robotic platforms for physical human-robot interaction.

DESIRABLE CRITERIA

1. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.
2. Experience with system identification, multi-agent systems and game theory.
3. Experience of generating research or knowledge exchange income.

The University is committed to equality and valuing diversity, and applications are particularly welcomed from women and black and minority ethnic candidates, who are under-represented in academic posts in Science, Technology, Engineering, Medicine and Mathematics (STEMM) at Sussex.