1 Advertisement

Post Title: Research Fellow in Informatics  
School/department: Engineering and Informatics, Informatics  
Hours: Full time or part time hours considered up to a maximum of 1.0 FTE. Requests for flexible working options will be considered (subject to business need).  
Contract: fixed term until 31 December 2022  
Reference: 6120  
Salary: starting at £33,797 to £40,322 per annum, pro rata if part time.  
Placed on: 3 June 2021  
Closing date: 21 June 2021. Applications must be received by midnight of the closing date.  
Expected start date: 1 July 2021 or as soon as possible thereafter.

We are recruiting Research Fellow for a challenging project entitled Automated Representation Choice for AI Tools and is funded by the EPSRC. The project is a collaboration between the University of Sussex and the University of Cambridge.

The project’s goal is to develop an AI system that will select representations for problem solving that are suited to individuals and to target problem domains. To demonstrate the capability of this novel technology the project is building a tutoring system that will tailor its choice of representation to individual students. Key components of the system include (a) a tool to capture rich models of representational systems from human tutors and (b) a tool to assess students’ competence with different representations by recording and analyzing their drawing and writing behaviours.

The principal tasks of the post-holder will be to design, implement and evaluate (a) the tool for interactive graphical representation modelling and (b) the tool for assessing student competence through their production of representations. The post-holder will collaborate closely with the other members of the project who are studying the cognitive science of representational systems and building the tutoring system’s representation selection engine.

You will be based at Sussex, work under the supervision of Prof Peter Cheng, and be a member of the Representational Systems (RepSys) Laboratory within the Creative Technology Research Group. Locally you will work closely with members of the RepSys Lab, and at a distance you will collaborate with the team members in Cambridge.

Applicants should have qualifications in computer science or a cognate discipline. We are seeking someone with substantial software systems development experience and diverse skills, including: JavaScript, Java, HTML5, PHP, databases, graphical user interface design, and HCI. A PhD in a subject area relevant to the project is desirable, but not essential.

When applying, please fill in the application form and attach a full CV. Use the space for additional information to explain how your skills are suited to the project, making reference to the essential and desirable sets of criteria outlined in the Job Description.
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.

Please contact Professor Peter Cheng, p.c.h.cheng@sussex.ac.uk for informal enquiries.

Please note that this position may be subject to ATAS clearance if you require visa sponsorship.

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

Please find further information regarding the department an school http://www.sussex.ac.uk/informatics/ and http://www.sussex.ac.uk/ei/

3. Job Description

Job Description for the post of: Research Fellow or Assistant in Informatics

Department: Informatics
Section/Unit/School: EngInf
Location: Chichester I
Grade: 7
Responsible to: Professor Peter Cheng
Responsible for: –

The primary activities for the post are to design, implement and evaluate software systems for the EPSRC project Automated Representation Choice for AI Tools. The project is a collaboration between the University of Sussex and the University of Cambridge.

The systems to be developed include:

- An interactive graphical tool for the modelling of representations (diagrams and notations). Subject matter experts, tutors, will use the system to build a library of rich descriptions of representations for use by an AI engine in a tutoring system to choose problem solving representations.

- A system for the capture and analysis of writing and drawing behaviours in cognitive science experiments. One application of the system will be to generate profiles of users’ degree of familiarity with classes of representations as a component of the AI tools for representation choice.
The systems are research prototypes so, in addition to skills spanning the full life cycle of software production, applicants must be able to demonstrate ingenuity and flexibility in order to identify and solve unique and challenging problems.

The appointee will also occasionally support the research activity in other projects in the RepSys lab. This may include the writing of code to support the processing and analysis of research data.

Expertise in JavaScript, Java, databases, HTML5, PHP, graphical user interface design are essential, as is experience in HCI. A PhD in a subject area relevant to the project is desirable, but not essential. Additionally, skill and knowledge in any of the following would be an advantage: programming for data analysis is desirable (Python, MatLab); mathematical skills, particularly in the areas of graph theory, discrete mathematics and logic; functional programming languages (e.g., standard ML, Haskell); an appreciation of cognitive science.

Web sites for further information:

- RepSys Lab – http://users.sussex.ac.uk/~peterch/
- Automating Representation Choice for AI Tools project – https://sites.google.com/site/myrep2rep/
- Department of Informatics – http://www.sussex.ac.uk/informatics/

4. Person Specification

4.1 PRINCIPAL ACCOUNTABILITIES

1. To engage in individual and/or collaborative research activity resulting in high-quality publications; and to develop research funding and knowledge exchange income individually or in collaboration with others, as appropriate, depending on the size and scope of the bid.

2. To contribute to School teaching activities.

4.2 KEY RESPONSIBILITIES

1. Research, Scholarship & Enterprise

1.1 Develop research objectives and proposals for own or joint research, at acceptable levels, with assistance if required.

1.2 Conduct research projects individually and in collaboration with others.

1.3 Analyse and interpret research findings and draw conclusions on the outcomes.

1.4 Produce high-quality research outputs for publication in monographs or recognised high-quality journals, or performance/exhibition, as appropriate, and contribute to the School's REF submission at acceptable levels of volume and academic excellence.

1.5 Contribute to the preparation of proposals and applications to external bodies, for example for funding purposes.
1.6 Individually or with colleagues, explore opportunities for enterprise activity, knowledge exchange income and/or consultancy, where permissible.

1.7 Build internal contacts and participate in internal networks and relevant external networks in order to form relationships and collaborations.

1.8 Continually update knowledge and understanding in field or specialism, and engage in continuous professional development.

2. Teaching & Student Support

2.1 Undertake teaching duties, if required.

2.2 Assist in the development of student research skills, for example as part of a postgraduate supervision team. (RF only).

2.3 Assist in the assessment of student knowledge and supervision of student projects if required.

3. Contribution to School & University

3.1 Attend and contribute to relevant School and project meetings.

3.2 Undertake additional duties, as required by the Principal Investigator and/or Head of School.

4. Role-specific duties

4.1 Develop research-prototype software applications, which will encompass design, implementation, documentation, testing, evaluation, and reporting.

4.2 Collaboration with members of the RepSys Lab and across the wider project teams.

This Job Description sets out current duties of the post that may vary from time to time without changing the general character of the post or level of responsibility entailed.

4.3 INDICATIVE PERFORMANCE CRITERIA

Research Fellow

- A PhD or equivalent scholarly or relevant professional activity.
- Pursuing a line of independent research within a research group.
- Publishing research (either from a recently completed PhD or new original research).
- Other forms of externally recognised professional practice of creative output of a standing equivalent to regular publication of original research.
- Initiating, developing or participating in links between the University and external bodies such as business and industry, the professions, community organisations and policy-makers.
• Evidence of successful engagement in teaching or supervision.

4.4 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. Significant experience in developing substantial interactive graphical web-based applications, with particular expertise in JavaScript, Java, databases, HTML5, PHP.


DESIRABLE CRITERIA

1. Experience of code development in Python and Matlab.

2. Experience with functional programming languages (e.g., standard ML, Haskell)

3. An appreciation of cognitive science and its research methods.

4. Mathematical skills, particularly in the areas of graph theory, discrete mathematics and logic.

5. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.

6. Experience of generating research or knowledge exchange income.

7. Willingness to travel occasionally, with overnight stays, within the UK and internationally.