School of Engineering & Informatics
Department of Informatics

Embedded Software Developer (Fixed term for 11 months, full time)

Salary range: starting at £32,004 and rising to £38,183 per annum.
Expected start date: As soon as possible

An exciting new position has become available to join the Interact Lab at the School of Engineering and Informatics of the University of Sussex, to assist in the development of new embedded systems to control sound manipulators.

The group is dedicated to pursue highly ambitious frontier research that involves creating novel prototypes and user interfaces based on acoustic wavefront manipulation.

Applicants will be involved in a variety of tasks:
- specification of system architecture and design
- Good understanding of microcontrollers, display drivers (NXP, Synaptics, TI and others) and communication hardware.
- coordination of the software and hardware integration and device prototyping

The applicant will be expected to contribute to the dissemination of the research through demonstrations of the work at academic and public events (e.g., CES 2018).

Ideal candidates have experience on technical aspects of one or more of the following areas:
- programming in c++, embedded C
- Low-level firmware
- Microcontrollers (Snapdragon, DLP)
- experience in multi-threading and concurrent programming
- experience with hardware integration, physical prototyping

Experience with the design of graphical user interfaces for controlling laboratory instruments or commercial devices will be highly desirable. Experience with MEMS may be useful.

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 a vibrant research group.

The Interact Lab is internationally renowned for its research in novel user interfaces that have led to many commercial exploitations (e.g., Ultrahaptics). The expectation is that this project will follow along those lines. The lab has excellent resources (exclusive access to 3D printers, laser-cutter and circuit-prototyping tool) to assemble electronic and mechanical prototypes in-house but at the same time we have resources to contract external companies where required.

The Lab consists of Prof. Subramanian as permanent staff member alongside 3 post-doctoral researchers, 3 PhD students and several support staff. The work of lab 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 Prof. Subramanian and the postdoctoral researcher Dr Memoli, with a base in the Department of Informatics. You can find more information about the group at http://interact-lab.com/
Enquiries
For informal enquiries, please contact Prof. Sriram Subramanian (sriram@sussex.ac.uk, +44 (0)1273 876829)

Closing date for applications: 8 February 2017

For full details and how to apply see www.sussex.ac.uk/jobs

The University of Sussex is committed to equality of opportunity

2. Senior leadership and management

The Vice-Chancellor (Professor Adam Tickell) is the senior academic officer and, as Chief Executive, is responsible to the University Council for management of the University. He is supported by an executive group which includes the three Pro-Vice-Chancellors, the Registrar and Secretary, the Director of Finance and the Director of Human Resources. The Heads of the Schools of Studies at Sussex report to the Pro-Vice-Chancellors.

The Registrar and Secretary heads the Professional Services of the University. In addition, under the University Statutes, the Registrar and Secretary is Secretary to the University Council. The Director of Finance reports to the Vice-Chancellor. The Director of ITS reports to the Registrar and Secretary, and the Librarian reports to one of the Pro-Vice-Chancellors.

3. 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

The Department of Informatics is highly rated for its teaching and research. Its researchers work in an environment that was deemed to be wholly 4*/3* (world-leading/ internationally excellent) in the REF 2014.

Sussex was ranked in the top 25 in the UK in The Guardian University Guide 2014. Our students are highly employable: in early 2014, 95% of our previous year's graduates were employed, and of those, 100% were in professional or managerial jobs.

The Department maintains a strong emphasis on interdisciplinary teaching and research, and has substantive links with almost all other Schools of study at Sussex. Its research spans the theoretical and applied.

The Department’s research is organised into three groups:

- Cognitive and Language Processing Systems (www.sussex.ac.uk/calps/)
- Evolutionary and Adaptive Systems (www.sussex.ac.uk/easy/)
- Foundations of Software Systems (www.sussex.ac.uk/foss/),

and also plays leading roles in cross-disciplinary research centres:

- Sackler Centre for Consciousness Science (www.sussex.ac.uk/sackler/)
- Centre for Computational Neuroscience and Robotics (CCNR) (www.sussex.ac.uk/ccnr/)
- Centre for Cognitive Science (COGS) (www.sussex.ac.uk/cogs/)
- Sussex Neuroscience (www.sussex.ac.uk/sussexneuroscience/).

The Department has long-standing collaborations with a range of external organisations including Animazoo, the Clinical Practice Research Datalink, and American Express, which has sponsored over 120 MSc students in Informatics over the past 10 years.

The Department currently has 33 teaching faculty, 420 undergraduates, 80 taught postgraduates, and 60 doctoral students. Detailed information about the Department can be found at www.sussex.ac.uk/informatics
4. **Job Description**

**Job Title:** Software Developer and Designer

**Grade:** 7 FTE 1.0

**School:** Engineering and Informatics

**Department:** Informatics

**Location:** University of Sussex Campus

**Responsible to:** Prof Sriram Subramanian

**Purpose of the post:**

The position will involve a variety of tasks as part of a project that aims to develop a new user interfaces based on acoustic wavefront manipulation with applications to VR. The post-holder will be mainly responsible for the specification of the embedded system architecture, software design, prototyping and the software-hardware integration.

The post-holder will closely collaborate with Prof Subramanian and the postdoctoral researcher Dr Memoli working on the project, as well as benefit from the team's expertise in designing and prototyping novel interfaces. Key aspects of the role include:

- specification of system architecture and design.
- working with microcontrollers, display drivers (NXP, Synaptics, TI and others), MEMS and communication hardware.
- coordination of the software and hardware integration and device prototyping.
- design of a commercial-grade driver for the final prototype.

**Principle Accountabilities / Main tasks**

1. To develop the software (& system) architecture and interface for a proof-of-concept implementation.
2. To liaise closely with the other members of the team, to develop and design the system and the hardware interface.
3. To investigate innovative methods and techniques for the embedded development, interface design and hardware integration/device prototyping.
4. To develop the integration for the specific application use cases.
5. To integrate the software and hardware.

**Specific Duties**

1. Requirements analysis for the system architecture and design for the proof-of-concept implementation (software with hardware integration).
2. Defining the software and hardware components and specifications for the programming language and language processors for the hardware integration.
3. Writing the software and specify the interface and device requirements.
4. Research and develop innovative methods for the design that will allow user interactivity where appropriate.
5. Presentation and demonstration of the implementation to academic and public user groups at public events.
6. Undertake fault-finding and bug fixing in response to incidents and problems.
7. Undertake tasks as identified by the assigned Project Manager.
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 the level of responsibility entailed.

Date 10 January 2017

5. **Person Specification**

**UNIVERSITY OF SUSSEX**

Person Specification for the post of a *Software Developer and Designer*

### SKILLS / ABILITIES

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<tr>
<th>Essential</th>
<th>Desirable</th>
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<tbody>
<tr>
<td>Demonstrable skills in the development of embedded software systems</td>
<td>X</td>
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<tr>
<td>Ability to design and build hardware systems and interfaces</td>
<td>X</td>
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<tr>
<td>Ability to conduct research in one or more of the following or related areas: human-computer interaction, acoustic interfaces, design for virtual reality, display driver designs</td>
<td>X</td>
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<td>Ability to organize own work with minimal supervision</td>
<td>X</td>
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### KNOWLEDGE

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<tr>
<th>Essential</th>
<th>Desirable</th>
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<tbody>
<tr>
<td>Proven knowledge in one or more of the following areas: embedded software design patterns, microcontroller use, hardware interface design.</td>
<td>X</td>
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<td>Experience with designing control software for laboratory instruments or commercial devices</td>
<td>X</td>
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### EXPERIENCE

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<tr>
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<th>Desirable</th>
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<tbody>
<tr>
<td>Experience of the development of embedded systems.</td>
<td>X</td>
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<tr>
<td>Experience of development with microcontroller, display drivers or communication hardware</td>
<td>X</td>
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<tr>
<td>Awareness of approaches for embedded design.</td>
<td>X</td>
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<td>Experience of designing interfaces (e.g., embedded C, c++).</td>
<td>X</td>
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### QUALIFICATIONS

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<tr>
<th>Essential</th>
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<tr>
<td>Degree in Computer Science, Electrical Engineering or a closely related subject.</td>
<td>X</td>
</tr>
<tr>
<td>Doctorate in Computer Science, Electrical Engineering or a closely related subject.</td>
<td>X</td>
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### PERSONAL ATTRIBUTES AND CIRCUMSTANCES

| Essential | Desirable |
| Excellent communication skills.       | X |
| Ability to work in a multidisciplinary team with a view to achieving the wider goals of the larger project. | X |
| Proficiency to handle confidential matters expeditiously. | X |
| Good time-keeping and punctuality.   | X |

Date 10 January 2017