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## Advertisement

**Post Title:** Hardware Developer in Sensor Readout Circuits  
**School/department:** School of Engineering and Informatics - Department of Engineering and Design - Sensor Technology Research Centre  
**Hours:** Part time hours considered up to a maximum of 0.55 FTE Requests for [flexible working](#) options will be considered (subject to business need).  
**Contract:** Fixed term for 4 months  
**Reference:** 2470  
**Salary:** starting at £33,797 to £40,322 pro rata, per annum  
**Placed on:** 9 October 2019  
**Closing date for applications:** 23 October 2019. Applications must be received by midnight of the closing date.  
**Expected start date:** As soon as possible.

The Sensor technology research centre at the University of Sussex is looking for a part time hardware developer to work with Dr Niko Münzenrieder and Dr Daniel Roggen on the research-intensive project "Shape sensing textile for orthotics - [SmartSensOtics](#)".

This 3 year project aims to develop a textile sleeve with an integrated array of stretchable sensors. The goal is to quantify the shape and the pressure applied to body parts covered with the textile sleeve, and hence to offer a digital alternative to traditional plaster cast moulds. The developed textile will be used by our industrial and healthcare partners to improve the process of manufacturing orthotics in the UK and low income countries. This project is in collaboration with an orthotics company based in the south of the UK, and a healthcare institution from Kenya.

Your role will be to develop and fabricate novel highly deformable sensors for strain, pressure and other modalities on polymer substrates. This will be done in our in-house fabrication facilities. In addition to the sensors themselves, this post also requires the design and fabrication of the polymer substrates. These substrates have to be compatible with thin-film fabrication techniques, and have tailored mechanical properties. Finally the mechanical and electrical properties of the sensors fabricated on the customised substrates have to be characterised.

This project is based at the Sensor Technology Research Centre at the University of Sussex, and involves the Wearable Technologies Lab (<http://www.sussex.ac.uk/strc/research/wearable>) and the Flexible Electronics Lab (<http://www.sussex.ac.uk/strc/research/flex>).

**Key Requirements.** This post is well suited to a highly motivated individual with excellent technical skills, significant experience in the design, fabrication, characterisation, and application of flexible electronic devices, as well as a willingness to operate in a dynamic research environment within an international team.

Candidates should have a MSc or PhD in mechatronics, robotics or another field combining mechanical and electrical engineering, and a strong background in sensors, thin-film technology, cleanroom processing, 3D printing, and ideally Smart textiles.

An established expertise in the application of research outcomes in the healthcare sector is desirable. The candidate should have a strong interest in the development and fabrication of novel sensors and their unobtrusive integration into epidermal systems and body worn devices.

**Background.** The Sensor Technology Research Centre at the University of Sussex works on the interface between electrical engineering, computer science, and physics to develop advanced and innovative sensor systems for applications in sports, healthcare, or wearable electronics. This project is funded by EPSRC, GCRF, and the National Institute for Health Research, as well as supported by local and international partners from the healthcare and research sector.

**Advantages and career development.** This part time position is ideally suited for somebody who wants to broaden their knowledge in the application of customized sensors in wearable electronics to support patients and professionals in the UK and international healthcare sector.

For any further information and informal inquiry contact Dr Niko Münzenrieder:

[n.s.munzenrieder@sussex.ac.uk](mailto:n.s.munzenrieder@sussex.ac.uk)

More details about the nature of the work can be inferred from past publications:

<https://scholar.google.co.uk/citations?user=hoc3XScAAAAJ&hl=en&oi=ao>

More information about the Sensor Technology Research Centre: <http://www.sussex.ac.uk/strc/>.

Applications should be accompanied by a full CV and a statement of how you envisage your role.

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 of Engineering and Informatics

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, interdisciplinary, 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.

Following a recent Professorial appointment, the School has just launched a major new School-wide research group in Creative Technology.

The Group brings together a number of academics working in the areas of human-centred technology, product design, experience design, tangible and physical computing, games, digital media, digital cultural heritage, child-computer interaction, broadcast technologies and social innovation.

### 2.1 Department of Engineering and Design

The Department of Engineering and Design has a strong reputation for excellence in research and teaching. Its research outputs were rated as 88%, and impact as 90% 4\*/3\* (world-leading/internationally excellent) in the REF 2014. In the 2014 NSS engineering students registered an 86% satisfaction level with respect to learning resources. Mechanical Engineering ranked 15<sup>th</sup> for graduate prospects, in the Complete University Guide 2015 and an overall ranking of 18<sup>th</sup> in the just

released 2016 *Guardian* University Guide; with Electrical Engineering ranked 14<sup>th</sup> for student satisfaction in the Complete University Guide 2014.

The Department's students won the automotive category of the Telegraph UK STEM Awards 2014 sponsored by McLaren Group (link to [video](#)).

Research activity is focused on mechanical engineering (turbomachinery, dynamics and control, and tribology); and electronic engineering (sensor technology, image and signal processing, and mobile digital communications). There are strong collaborations with industry, including Jaguar Land Rover, General Electric, Plessey Semiconductors and Meggitt Sensing Systems.

The Department's research is organised into four groups:

- Dynamics, Control and Vehicle Research Group ([www.sussex.ac.uk/dcv](http://www.sussex.ac.uk/dcv))
- Industrial Informatics and Signal Processing Research Group (<http://www.sussex.ac.uk/iisp/>)
- Sensor Technology Research Centre ([www.sussex.ac.uk/strc/](http://www.sussex.ac.uk/strc/))
- Thermo-Fluid Mechanics Research Centre (<http://www.sussex.ac.uk/tfmrc/>)

The Department currently has 495 undergraduate students, 62 taught postgraduate students, and 43 postgraduate research students.

The Department's undergraduate courses, all of which are accredited and have an industrial placement year option, include:

MEng (Hons) / BEng (Hons) Automotive Engineering  
MEng (Hons) / BEng (Hons) Computer Engineering (*a cross-School course between the Departments of Engineering and Design and the Department of Informatics*)  
MEng (Hons) / BEng (Hons) Electrical and Electronic Engineering  
MEng (Hons) / BEng (Hons) Mechanical Engineering  
BSc (Hons) Product Design.

The Department's masters level courses, the majority of which are also accredited, are in the process of being reviewed as part of a cross-School process, the courses currently include:

MSc Advanced Mechanical Engineering  
MSc Digital Communication Systems  
MSc Embedded Digital Systems  
MSc Engineering Business Management

Detailed information about the Department can be found at [www.sussex.ac.uk/engineering](http://www.sussex.ac.uk/engineering)

## 2.2 Department of Informatics

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, ranking 19 in the UK in The Guardian University Guide 2016. 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/](http://www.sussex.ac.uk/calps/))
- Evolutionary and Adaptive Systems ([www.sussex.ac.uk/easy/](http://www.sussex.ac.uk/easy/))
- Foundations of Software Systems ([www.sussex.ac.uk/foss/](http://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/](http://www.sussex.ac.uk/sackler/))
- Centre for Computational Neuroscience and Robotics (CCNR) ([www.sussex.ac.uk/ccnr/](http://www.sussex.ac.uk/ccnr/))
- Centre for Cognitive Science (COGS) ([www.sussex.ac.uk/cogs/](http://www.sussex.ac.uk/cogs/))
- Sussex Neuroscience ([www.sussex.ac.uk/sussexneuroscience/](http://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 420 undergraduates, 80 taught postgraduates, and 60 doctoral students. Undergraduate courses, accredited by the relevant professional institutions where appropriate, and have an industrial placement year option, include:

MComp (Hons) / BSc (Hons) Computer Science  
BSc (Hons) Computer Science and Artificial Intelligence  
BSc (Hons) Computing for Business and Management  
BSc (Hons) Computing for Digital Media  
BSc (Hons) Games and Multimedia Environments  
MEng (Hons) / BEng (Hons) Computer Engineering (*a cross-School course between the Department of Informatics and the Departments of Engineering and Design*).

The Department's masters level courses are in the process of being reviewed as part of a cross-School process, the courses currently include:

MSc Advanced Computer Science  
MSc Computing with Digital Media  
MSc Evolutionary and Adaptive Systems  
MSc Human-Computer Interaction  
MSc Information Technology with Business and Management  
MSc Intelligent Systems  
MSc Management of Information Technology.

Detailed information about the Department can be found at [www.sussex.ac.uk/informatics](http://www.sussex.ac.uk/informatics)

## CORE JOB DESCRIPTION

<b>Job Title:</b>	Hardware developer
<b>Grade:</b>	Grade 7
<b>School:</b>	School of Engineering and Informatics
<b>Location:</b>	Sensor Technology Research Centre, University of Sussex
<b>Responsible to:</b>	Principal Investigator through to Head of School
<b>Direct reports:</b>	n/a
<b>Key contacts:</b>	Members of research group, members of faculty within the School and University.
<b>Role description:</b>	Hardware developers are expected to create and characterize demonstrators, and to support the work of the research team.

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## 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 if required.

## KEY RESPONSIBILITIES

### 1. Research, Scholarship & Enterprise

- 2.1 Contribute to research projects in collaboration with others.
- 2.2 Analyse and interpret findings and draw conclusions on the outcomes.
- 2.3 Individually or with colleagues, explore opportunities for enterprise activity, knowledge exchange income and/or consultancy, where permissible.
- 2.4 Build internal contacts and participate in internal networks and relevant external networks in order to form relationships and collaborations.
- 2.5 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 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 deformable sensors for strain, pressure, and other modalities.

4.2 Design and fabricate polymer substrates for deformable sensors with tailored mechanical, chemical, and electrical properties.

4.3 Use thin-film technology, solution processes technology, cleanroom processing, and printing to fabricate polymer based substrates and sensors.

4.4 Evaluate the mechanical and electrical performance of the developed devices and systems.

4.5 Build wearable sensor systems based on the developed sensors.

4.6 To acquire, save and transmit sensor data using a custom build digital system (wearable micro-computer)

4.7 To support the evaluation, related to the healthcare sector, of the sensor textile in the UK and Kenya.

4.8 Support a potential commercialization of the developed technologies.

4.9 Generate innovation ideas which may result in patents.

4.10 Exchange expertise with PhD students and colleagues.

4.11 Collaborate with the industrial partners, generate deliverables and reports and assist with flow of information among stakeholders.

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.

### **INDICATIVE PERFORMANCE CRITERIA**

- A PhD, or MSc in mechatronics or robotics.
- Experience with thin-film technology, cleanroom processing and 3D printing.
- Initiating, developing or participating in links between the University and external bodies such as business and industry, the professions, community organisations and policy-makers.
- Experience with electronic sensors and sensor readout systems.

- Experience with flexible electronics.
- Experience in the electrical and mechanical characterisation of sensors.

## **PERSON SPECIFICATION**

### **ESSENTIAL CRITERIA**

1. Educated to MSc or doctoral level, or other equivalent qualification, 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 A degree in mechatronics or robotics.
- 2 Experience in the fabrication and characterisation of deformable mechanical structures.
- 3 Experience in the design and fabrication of analogue sensors.
- 4 Experience in the design and fabrication of functionalized polymer structures
- 5 Experience with flexible electronics, and strain/pressure sensors.
- 6 Experience of writing high-quality technical.

### **DESIRABLE CRITERIA**

1. Experience of generating research or knowledge exchange income.
2. Emerging track record of high-quality publications in reputable journals and other appropriate media of similar standing.
3. Experience with, liquid metals, oxide semiconductors, thin-film transistors, or smart textiles

**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.**