



1 Advertisement

Post Title: Research Engineer - Hardware and Software

School/department: School of Engineering and Informatics - Department of Engineering and Design - Sensor Technology Research Centre

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 3 February 2022 or for 6 months with possibility of extension

Reference: 6547

Salary: starting at £34,304 to £40,927 per annum, pro rata if part time

Placed on: 23 August 2021

Closing date: 20 September 2021. 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 Research Engineer to work on an innovative project funded by a large consumer electronics multinational. The primary aim of the project is to develop a novel near-field capacitive communication channel based on the patented Electric Potential Sensor technology.

This is an exciting opportunity to participate in a project that may lead to commercialisation of innovative communication links for various smart wearable devices, such as transmitting music from a mobile phone to a pair of headphones.

As part of the role, you will be assisting the researchers in fabricating analogue and digital circuits, programming embedded platforms, setting up experiments, characterising circuits using test equipment and process the collected data. You will also be contributing towards writing scientific papers and monthly reports. You will be working in a core team of two to three researchers within a larger research centre.

Ideal candidates would have experience with the technical aspects of one or more of the following areas:

- Schematic capture and PCB design (Altium Designer preferred)
- PCB manufacture and assembly both for SMT and THT devices
- Programming in C / C++ for embedded systems (ARM / AVR microcontrollers)
- Simulation of electric fields using e.g. MATLAB or COMSOL
- Experience in using test equipment such as oscilloscopes, function generators, signal analysers and spectrum analysers
- Experience in data acquisition using ADCs, USB DAQs and embedded platforms
- VHDL/Verilog programming for FPGAs
- Experience of using Python and willingness to develop custom scripts for GNU Radio
- Controlled experimental setups and data analysis (e.g. MATLAB, OriginPro)

We seek a highly organised and motivated individual with excellent scientific and technical skills. An individual able to multitask and work independently with minimal supervision while maintaining excellent attention to detail and bringing energy and enthusiasm to their work.

Employment will be subject to the right to work in the UK. You will work directly with Prof.

Roggen and the postdoctoral researcher Dr Pouryazdan.

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

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.

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 school/division at www.sussex.ac.uk/engineering

3. Job Description

Job Description for the post of: Research Engineer - Hardware and Software

Department: Department of Engineering and Design

Section/Unit/School: School of Engineering and Informatics

Location: Sensor Technology Research Centre, Richmond Building 4B2/3/4/7

Grade: 7.1

Responsible to: Prof. Daniel Roggen

Purpose of the post:

This position will involve a variety of tasks as part of project that aims to develop a novel ultra-low power electric field based communication system for smart wearable devices. The post holder will be mainly responsible for development of software, fabrication of hardware, procurement of components and laboratory consumables as well as assisting the researchers on setting up experiments, data collection and visualisation. The post-holder will collaborate closely with Dr Arash Pouyazdan in the design and development of the hardware while respecting the project requirements.

Principle Accountabilities / Main tasks

1. Development of embedded software using a variety of programming languages and platforms (e.g. Teensy, C++, Python, MATLAB)
2. Procurement of components and laboratory supplies

3. Data collection, processing and visualisation using commercial stand-alone and/or USB based test equipment
4. Fabrication, modification and characterisation of novel circuits being developed as part of the project
5. Liaise closely with other members of the team, to develop and design controlled experiments and project demos
6. To integrate hardware and software developed during the project

Specific Duties

1. Schematic capture and PCB design
2. PCB manufacture and assembly using in-house processes (LPFK) and external suppliers
3. Electrical work such as soldering, live system testing, etc.
4. Use of electronic analysis equipment to measure performance and debug complex circuits (Oscilloscope, NI products, high-frequency ADCs)
5. Programming in C / C++ for embedded systems (ARM / AVR)
6. Development of MATLAB scripts for simulation, digital signal processing and data visualisation
7. Contribute to design and creation of controlled experimental setups to explore hypotheses and evaluate metrics (Scientific approach and prototyping)
8. Working with SDR and related software interfaces (HackRF One, GNU Radio, Python etc.)
9. Data plotting and analysis of experimental results to guide research trajectories
10. Procurement of project specific supplies and general stock for lab maintenance
11. Writing technical reports and contributing towards scientific publications
12. Working knowledge of Health and Safety e.g. conducting risk assessments, as it pertains to the laboratory environment
13. Ensure the implementation of a safe working environment using good working practices, in line with relevant local and legal requirements. Undertaking standard risk, or other safety assessments, and producing standard operating procedures when necessary, under the supervision of the Principle Investigator or supervisor
14. Undertake fault-finding and bug fixing in response to incidents and problems
15. 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.

4. Person Specification

ESSENTIAL CRITERIA

1. Educated to BSc with relevant experience or MSc level, or other equivalent qualification, as appropriate to the discipline (see role-specific criteria below).
2. Excellent presentation skills, with the ability to communicate effectively, both orally and in writing, with students, colleagues, and external audiences.
3. Ability to work individually on own initiative and without close supervision, and as part of a team.
4. Ability to exercise a degree of innovation and creative problem-solving.
5. Excellent organisational and administrative skills.
6. Ability to prioritise and meet deadlines.
7. Excellent IT skills.

ESSENTIAL ROLE-SPECIFIC CRITERIA

1. Educated to degree level in Electronic Engineering computer science or a closely related subject with relevant experience
2. Demonstrable experience in programming for embedded platforms
3. Demonstrable skills in schematic capture, PCB design and a good understanding of analogue and digital signal processing
4. Experience with electronics and bespoke embedded systems
5. The ability to tackle challenges methodically with scientific curiosity
6. Experience of writing high-quality technical reports, documentation, and publications

DESIRABLE CRITERIA

1. Knowledge of electric field sensing devices (e.g. Electric Potential Sensor)
2. Knowledge of digital communication methods (e.g. FM, PM, FSK, PSK)
3. Knowledge of designing electric, magnetic or acoustic field simulations
4. FPGA Programming experience