CORTIRIO

# Digital electronics & signal processing engineer

£45,000, London

## Company information

Cortirio's mission is to save lives by developing low-cost, portable brain imaging.

Brain injuries are the most common cause of death and life-long disability amongst the under 45s. Current brain imaging technology is non-portable and expensive, causing delays to treatment and costing lives. The problem is even more acute in low and middle income countries: two-thirds of the world's population lack access to even basic medical imaging.

Cortirio are developing a portable, wearable headset that enables brain imaging at the bedside or the roadside. Our technology uses infrared light to image blood at high resolution and automatically detect injuries.

We're looking for people who want to grow with the company, take on responsibility and adapt to new challenges. You will work in a tight-knit team but have the autonomy to have a big impact on the product, the company and the world.

## Role description

The role is to design and develop the digital electronics and signal processing algorithms for wearable infrared medical imaging. The product uses a high density emitter and detector array. The device operates in a challenging environment for signal-to-noise so experience working with high precision digital signal processing is essential. You will develop measurement routines and sensor calibration strategies to drive to ever higher image fidelity and resolution. You will continually push the state of the art in lightweight, high sensitivity electronics to produce life-saving products.

You will work alongside a small, focussed team of engineers and scientists to develop the product. Within the team, you will have ownership of the analogue front-end and work independently to design the analogue architecture. You will also collaborate with the team, contributing to all aspects of device design, from mechanics to firmware.

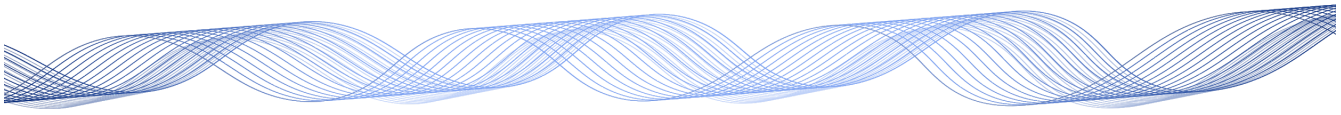
There are options for flexible and remote working. Stock options will be offered.

## Role responsibilities

- Design the digital electronics architecture for a wearable, highly-parallel measurement array
- Develop sensor calibration and measurement routines
- Develop firmware to capture, process and transfer measurements
- Develop digital signal processing algorithms for noise reduction, hardware calibration/compensation
- Develop imaging software using mathematical/physics models of light propagation in 3D

## Core experience

- 5+ years experience in digital signal processing developing sensor products
- Experience designing digital electronics (including schematics and PCB layout)
- Interfacing with high precision A/D and D/A converters
- Implementation of sigma delta converters in FPGA
- Developing algorithms to process/calibrate raw sensor data
- Work with signals in a challenging signal-to-noise environment
- Designing FPGAs HDL (system verilog prefered)
- Signal processing in the frequency domain
- Comfortable developing and debugging a signal processing chain from board to software
- Development of signal processing algorithms in a high level language (preferably python)
- Good understanding of embedded software development best practices



## Desirable experience

- Developing microcontroller firmware in C/C++
- SPI, I2C, LVDS, DMA, PLLs on microcontroller or FPGAs
- Digital signal processing experience with modulation/demodulation algorithms
- Implementation of sigma delta converters on FPGAs
- Experience with biological or sensor signals
- GPU programming
- Developing physics/mathematical models

## To apply

Please email your CV to hiring@cortirio.com

CORTIRIO

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