



SERG Technologies www.sergtechnologies.com

Company Profile:

SERG technologies is an Imperial College spin-out developing smart wearables in healthcare. This role is an exciting opportunity for a motivated signal processing engineer to join a fast-paced start-up company, working on all-encompassing activity monitoring and symptom quantification for the next generation of Human-Machine Interfaces (HMI) for Parkinson's patients. We have created a wearable platform based on a new kind of muscle sensing technology and have had great success in initial in-clinic trials. We are now looking to create a commercially system which can both fit invisibly into current clinical settings, and work as a home-wearable system to improve treatment options long term. The right candidate has the chance to make real improvements to the quality of life of those living with this condition.

Job title: Signal Processing Engineer (PD-FT)

- This is a permanent full-time position.
- Salary: 35k-38k
- Location: South Kensington, London, UK

The Role: We are looking for a driven signal processing engineer to further develop our existing HMI technology. The successful applicant will lead on the development of signal processing to quantify parkinsonian symptoms both in hospitals and at home, using data gathered from our own patented muscle sensors and activity monitors. The role will also include the design and implementation of activity identification, in which prolonged and unstructured use will be analysed through a range of physiological indicators in a variety of conditions.

The successful applicant will have a strong background in physiological signal processing, inertial measurement, embedded systems and activity detection.

Responsibilities will include:

- Clinical testing of an automated system for Parkinson's Disease (PD) diagnosis with neurologists in clinic to generate data on patient utility.
- Investigation of muscular rigidity and underlying neural signals in PD to quantify movement dysfunction.
- Directing tests with PD patients undergoing functional neurosurgery during recording of internal local field potentials which correlate to muscular rigidity.

Desired qualifications and skills:

- An engineering or computing degree (PhD level or equivalent) in signal processing and pattern recognition.
- Familiarity with;
 - using object-oriented programming languages (Python, C family, Java),
 - machine learning toolboxes such as Tensorflow 2.0, scikit-learn, Pytorch,



- programming mobile applications (Android is preferred),
- developing cloud-based solutions,
- translating solutions to embedded platforms.

Salary will be commensurate with qualifications, skills and track record and will include performance incentives based on company growth.

What to do next:

Applicants are invited to send their 2-page CV and job specific cover letter to Samuel Wilson at s.wilson@sergtechnologies.com with a subject line which contains the **Job title**.

Any questions relating the to position can be addressed to info@sergtechnologies.com, and we will get back to you as soon as possible.

The first round of applications will close on 29th January 2020 and invitations to interview will be issued by 9th February.



Find out more about our work on YouTube:

How close are we to Star Wars-like prosthetics?

<https://www.youtube.com/watch?v=RZd866aK5IU&list=PLRCb4pH3hx0uIOXWX-8qmZRMbuFNVfRTy>

Physiological Gesture Recognition for UAV Teleoperation

<https://www.youtube.com/watch?v=CJb0KW5RrU0&list=PLRCb4pH3hx0uIOXWX-8qmZRMbuFNVfRTy&index=4&t=0s>

Biomechatronics NU Interface

https://www.youtube.com/watch?v=o7J1Z_4rRnw&list=PLRCb4pH3hx0uIOXWX-8qmZRMbuFNVfRTy&index=5

Read some of our research at Imperial College:

Upper-limb prosthetic control using wearable multichannel mechanomyography

<https://ieeexplore.ieee.org/abstract/document/8009427>

Formulation of a new gradient descent MARG orientation algorithm: Case study on robot teleoperation

<https://www.sciencedirect.com/science/article/pii/S0888327019303012>

Hand gesture recognition with convolutional neural networks for the multimodal UAV control

<https://ieeexplore.ieee.org/abstract/document/8101666>

Automated assessment of symptom severity changes during deep brain stimulation (DBS) therapy for Parkinson's disease

<https://ieeexplore.ieee.org/abstract/document/8009462>

Find out more about the Biomechatronics Lab at Imperial College:

<http://www.biomechatronicslab.co.uk/>