**PhD Project Proposal**

School of Electronics, Electrical Engineering and Computer Science

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| **Proposed Project Title:** Biophysical EMG Analysis for Intelligent System Control |
| **Principal Supervisor:** Dr. J. McAllister |
| **Project Description:**  Biophysical signals produced by the human body, such as EEG, ECG and EMG, are becoming increasingly useful for remote control of robotic devices. For instance, by placing multiple EMG sensors on the human arm, wrist-hand movements can be detected and used to control similar movements of a robotic limb, a prosthetic, or objects in a virtual environment. This capability extends across the remit of bio-physical signals.  However, the equipment and processing to enable this capability is currently extremely expensive. This project will address this situation. It aims to develop a portable, battery-powered method for acquiring and processing EMG signals and classifying these into motions/actions. The focus is on efficiency – enabling all of the sensing and processing on-board on a body-worn device. This project builds on successful work already taken in the school in this area.  **Objectives:**   1. To study EMG sensing and data processing techniques. 2. To devise novel EMG analysis methods and the sensing and processing requirements for practical realisation of these techniques. 3. To realise a prototype which realises the equipment in 2. 4. Present initial results in international data processing forums. 5. Publish findings in IEEE journals. |
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