

SCHOOL OF ENGINEERING

FINAL REPORT

DESIGN OF PC BASED EMG MONITORING SYSTEM

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Abstract

A PC based EMG monitoring system that is able to acquire the raw EMG signals input from muscle fibers and monitoring the patterns of the signals is presented in this report. Along with this monitoring system, a statistical analysis is being presented in this report in which will demonstrate the benefits for significant number of disabled people.

In this project, the monitoring system is basically divided into four main parts. The first part consists of the insight explanation on what is electromyography is all about in details as well as the literature review being done. The second part consist of hardware designing which is needed to amplify the small EMG signals through electrodes to the monitoring system as technical details will be presented along. The third part consist of the explanation of software development being made to enable interfacing between users and the system, it will utilize the Data Acquisition System to acquire raw EMG signals in which are briefly explain through the MATLAB program.

The last part will consist of the statistical analysis results and discussions of performing dumbbell weight lifting from 2kg to 10kg on even number of weight values. Furthermore with all these analysis information, a biofeedback system has been developed to do signals recognitions from muscle contractions. All of these results could well contribute for the advancement in biomedical engineering. Therefore this project details the solutions adopted along with the background to the decision.