

Electromyogram (EMG) signal processing analysis for clinical rehabilitation application

Abstract

Analysis of electromyogram (EMG) signal processing and its application to identify human muscle strength of rehabilitation purpose has been successfully carried out in this paper. Single channel EMG signal was obtained from human muscle using non-invasive electrodes and further process by signal acquisition circuit to get a suitable signal to be process. In the first part of signal acquisition, the amplification circuit for the small EMG signal has been design successfully. After amplification stage EMG signal was digitized through analogue and digital converter (ADC) then further process in microcontroller (ATmega328) for getting accurate EMG signal. Finally, the processed EMG signal was classified into 6 different levels in order to display the muscle strength level of the user. This EMG device can be used to help the weak person or an elderly to identity their strength level of muscle for clinical rehabilitation purpose.