ABSTRACT

Exoskeleton is a tool like an additional clothing that aims not only to protect, but also to increase the wearer's abilities. Electromyography (EMG) is a technique for evaluating and recording the electrical activity produced by skeletal muscles. The purpose of this study was to analyze the differences in use analog and digital filters on EMG and the effect on the exoskeleton simulation. The main design consists of the myoware module, notch circuit, low pass filter, arduino uno, DAC module, teraterm software, and matlab. The EMG signal is intercepted by the myoware module and continues to other circuits, then recorded on the Teraterm software, and analyzed by Matlab. The results of this study obtained digital and analog filters have different values. The implementation of digital and analog filters on the device is not very different. The voltage value on the analog filter is 1.541 Volt during relaxation and 2.086 Volt during contraction, while the digital filter that has passed through the DAC has a value of 41.8 mVolt during relaxation and 269.1 mVolt during contraction. This tool can detect changes in the use of different types of filters, future research can be developed with comparisons of other digital filters and replaced with wireless systems.

Keywords — EMG, Filter Analog, Filter Digital