

ABSTRACT

A prosthetic hand is an artificial device that resembles the shape of a human hand that serves to replace the part of a human hand that has a physical disability. In the development of prosthetic hands technology has been developed in various kinds, ranging from passive prosthetic hands to bionic hands that can be moved by using the signal of the remaining hand muscles.

The design of prosthetic hands can utilize one of the intelligent bio signal systems by using EOG signals. Electrooculography is a technique for measuring potential differences between the front (positive pole formed by the cornea) and the back (negative pole formed by the retina) of the eyeball which can be used to detect eye movements. 2-dimensional motion prosthetic hand with signal control EOG uses a wireless network system that is bluetooth in sending and receiving commands from EOG signals to make it easier for users of prosthetic hands. Determination of the five categories of eye movements namely front, right, left, up and down with a threshold value.

Hardware implementation uses five electrode sensors installed around the eye, accompanied by basic instrumentation amplifier circuit, high pass filter order 2 cut off frequency 0.1 Hz, low pass filter order 2 cut off frequency 30 Hz, non inverting amplifier, summing amplifier, notch filter frequency cut off 53 Hz and Arduino UNO as a microcontroller with a 5V voltage source from the battery module. The results of the system test are obtained 5 times the error value for each eye movement, 0% right; left 0%, top 36%, bottom 4% and front 16%.

Keywords: Electrooculography, Prosthetic Hands, Wireless, Bluetooth, Arduino UNO.