

ABSTRACT

Electromyography (EMG) is a technique that is used to records electrical activity produced by human's muscle contraction. EMG was designed and used to medical research needs and diseases diagnosis. But as technology developed, this day EMG has been applied in control system such as robotics.

In this final year project had been done design and implementation wireless electronic device switch control using electromyograph and microcontroller. EMG used to produce information signal formed in electromyogram which processed by microcontroller then. The electromyogram converted into commands which then sent to XBee transmitter. After that XBee transmitter sent the command to XBee receiver wirelessly. The command received by XBee receiver would forwarded to the second microcontroller. The second microcontroller will decode the command received as command to make power relay on or off.

This final project has successfully implemented and from system testing has obtained some of the following conclusions. The EMG has successfully implemented with the ability of gaining input signal is 2563,432 times. EMG will tap the electromyogram which have frequency value between 46 Hz – 520 Hz. Maximal distance between user and the hardware to make the system works 100% is 30 meters at line of sight area and 15 meters at area with obstacle. The result of whole system testing is an accuracy level control, which valued 84,167 %. This final project system implemented and worked well as designed.

Keywords: Electromyography, EMG, robotics, electromyogram, microcontroller, wireless, XBee, transmitter, receiver, power relay, line of sight, obstacle, accuracy.