ABSTRACT

Nowadays, many tools which is designed to assist something activity. In biomedical, the technology can be used to help people with disability while working. One of biomedical technology is electrooculogram (EOG) which is a biopotential signal that is produced by resting potential record of eye retina. EOG as a control signal has not been developed, whereas it has potency to be a controller signal.

In this final project was designed a system which can process the EOG signal to control mobile robot movements. The EOG that used in this system are the eyes movements to the right or to left, using the acquisition system was designed with 500 times gain and the bandwidth is limited to 0,1-30 Hz. The decoded data from the acquisition system is received by Arduino Uno, then it is transmitted to Android mobile phone through audio port. Android mobile phone was used as bridge between EOG and mobile robot via Bluetooth connection. Data from Arduino Uno is transmitted to mobile robot using installed Android application. The data which is received by mobile robot is executed as a command that will move the mobile robot to the right or to the left.

Based on the testing result, the EOG based controller system using Android mobile phone which is developed in this final project give a good performance. The system was tested by three users and gave the testing result 91% in accuracy.

Keywords : electrooculogram (EOG), Android, Arduino Uno, mobile robot, bluetooth, audio port.