

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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A PROJECT REPORT ON

“EOG BASED HMI FOR PARALYZED PEOPLE TO CONTROL ELECTRICAL DEVICES”

*Submitted in partial fulfillment of the requirement for the award of the degree of
Bachelor of Engineering*

In

ELECTRONICS AND COMMUNICATION

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ABSTRACT

Bio-based human interface (HMI) has attracted more and more attention of researches all over the world in the recent years. In this project, a HMI system based on electro-oculogram (EOG) is proposed. It transforms electrical potentials recorded by horizontal and vertical EOG into computer/ or pattern re-organization module wirelessly, in order to control an external equipment according to eye movements. The system consists of EOG acquisition unit with wireless interface, EOG pattern recognition part and control command output unit with a display screen. Three plane electrodes are employed to detect EOG signals, which contain the information related to the eye blinking and vertical or horizontal eye movements referred to pre-designed command table. An online signal processing algorithm is designed to get the command information in EOG signals, and these commands could be used to control the computer or other instruments. Based on this HMI system, the remote control experiments driven by EOG are realized.

Bio-based human computer interface (HCI) has the potential to enable severely disabled people to drive computers directly by bioelectricity rather than by physical means. Persons with severe disabilities have the ability to control their eye movements, which could be used to develop new human computer interface systems to help them communicate with other persons or control some special instruments. Furthermore, this application of EOG-based HCI could be extended to group of normal persons for game or other entertainments.