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*Electrooculography: A New Approach on a Human-Computer Interface*

People with physical disabilities face a lot of problems with communication with their fellow human beings. Research institutes have been experimenting with expensive and complex equipment in order to help these people overcome communication problems. However, there are not many commercial solutions available for these people thus far, hence the few systems available are not affordable whatsoever. One of the objectives of this project is to develop a Human-Computer Interface (HCI) with a very low budget using electrooculography. This will hopefully give these people access to an affordable way to communicate with others. A mathematical model was developed in order to accomplish this task, and thus create an innovative way to develop a cheap, yet a reliable amplifier system for bioelectrical signals. Digital electronics, biomedical engineering and software programming were very useful fields working hand in hand to accomplish this project. The HCI will be shown to work in two different manners: By transmitting data to the computer via the serial port, and transmitting information to another circuit I developed that is hereby explained. This other project consists of programming several microcontrollers that work in synchronization in order to send data to a NTSC (National Television System Committee) Television and at the same time interact with the application remotely by using a 'home-brew' digital remote controller sensitive to motion. Both projects will work together in order to prove how successful the development can be of these systems with inexpensive hardware and with the help of engineering concepts.