

ABSTRACT

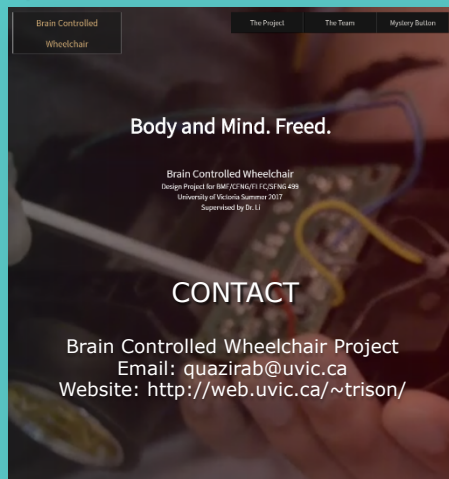
Movement disorders are neurological conditions that affect the speed, fluency, quality, and ease of movement. Abnormal fluency or speed of movement.[2]

Movement disorders may include the following conditions:

- Ataxia
- Dystonia
- Huntington's disease
- Parkinson's disease

Lost of movement control prevent those people from using regular electric wheelchair.

The goal of this project is to design and build an affordable and easy to use wheelchair system for people in need.



DESIGN

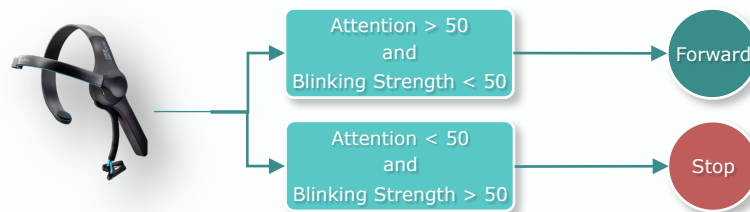
Data Classification Model



Classification Model Prediction



Concept Demonstration



REFERENCES

1. <http://www.healthcommunities.com/movement-disorders/overview-of-movement-disorders.shtml>
2. <http://neurosky.com/biosensors/eeeg-sensor/biosensors>

PRODUCT

A wearable EEG scanner is used to receive and collect brainwave signals from user. Then the signals will be analyzed and transmitted to the control box, which direct the movement of the wheelchair.

• What is an EEG scanner?

Electroencephalography (EEG) is an electrophysiological monitoring method to record electrical activity of the brain. It is typically non-invasive, with the electrodes placed along the scalp, although invasive electrodes are sometimes used such as in electrocorticography. EEG measures voltage fluctuations resulting from ionic current within the neurons of the brain.[1]

• How reliable is the system?

Reliability is the key for every control system. In order to improve accuracy for our system, all data will be individually trained for each user. We will collect up to 5 hours of intense mind data, and up to 5 hours of meditation data from user. All the collected data will be put through a classifier. The classify system will provide accurate signal output which is suited for designated user.



• How compatible is the system?

Is our system compatible with the major model of electric wheelchair on the market? Do you need to purchase a specific model to use our system? The answer is Yes!

• Do you need to purchase a specific model to use our system?

The answer is No!
The control system we have developed for this project will be compatible with most electric wheelchair on the market after some minor modifications applied to current design.