

PROJECT TITLE *Offline BCI System*

Project Supervisor: Brian Lithgow

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Department: Electrical and Computer Systems Engineering

Any pre-requisite subjects: Nil

The Problem

Much research is being conducted to implement new interfacing devices known as BCI (Brain-Computer interfacing) systems, which aim to assist paralysed people. BCI system users will be able to control machines with the power of their minds using this interfacing technique.

BCI research has used this idea to create and develop an interfacing device to give augmented reality users a new exciting experience to navigate and interact with the virtual world by thinking about movements.

Current augmented reality systems use special gloves and other devices to interact with the virtual world. BCI systems will remove the need for these devices and will improve users' experiences. Although there are some BCI interfacing systems available, most of them only distinguish between two or three different tasks and the others use actual movement instead of imagined movement.

The Project

Using non-invasive Electroencephalography, signals will be acquired from sensorimotor and motor cortices. Information will be extracted from these signals to be used for the classification.

The proposed method will distinguish eight different movements which are appropriate for navigating the augmented reality while most current research is based on movements of right and left hands to generate different commands. The goal of this project is to identify the brain signals and find the minimum numbers of electrodes sufficient to distinguish eight different tasks. Further goals will include extracting required information and showing that data are consistent from person to person and that the method is reusable for different subjects.

Dates: 17/11/08 to 20/2/09, one student

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