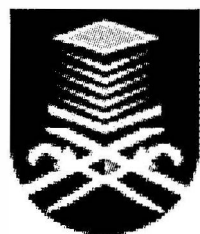


**ANALYZING THE DELTA STATE BRAINWAVE  
SIGNAL AFTER HR INTERVENTION USING (EEG)**

Thesis is presented in partial fulfillment for the award of the  
**Bachelor of Engineering (Honors) in Electrical Engineering**  
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## ABSTRACT

This research is about analyzing the Delta state of brainwave using EEG and Horizontal Rotation (HR). EEG signals were captured from 32 students for 3 sessions, beginning of semester, middle and end of semester before and after they underwent HR using two-channel bipolar connection in a controlled environment. The signals were filtered and classified into four main frequency bands: Delta, Theta, Alpha and Beta. The Delta states of brainwave were taken out for analyses. Graphs were plotted and paired T-test analysis was used to show the correlation between the left and right brainwave before and after HR to verify the brainwave synchronization. Another test was done to show the student's brainwave behavior for 3 sessions, beginning , middle and end of semester. It was observed that after HR, brainwaves were more balanced after the two sessions, middle and the end of semester. In conclusion, there was proven that HR could synchronize brainwave.

**Keywords:** Electroencephalograph (EEG), Motion Technology System, Brain Optimization and Synchronization System, Horizontal Rotation System, Delta state.

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## **CHAPTER 1**

### **1.1 INTRODUCTION**

In the new era environment, human factor has become the central issue for maintaining sustainable society. If each individual leads a healthy and a happy life, then the society as a whole will be prosperous and successful.

In recent years there have been increasing interest in the area of brain research particularly brain balancing to promote healthy and happy life. This analysis is an attempt to evaluate the brain's behavior and the effect on brainwave balancing according the situations by applying Electroencephalography (EEG) system and horizontal rotation technology.

As most people know, different parts of the brain are assigned different tasks. The brain is lateralized - asymmetrical, by design. And, there is a very good reason for that. The split-brain design allows us to process many things at once. We owe our ability to multi-task to the hemispheric design of the brain. Like the human brain, many modern computers are coming with essentially 2 hemispheres, or Dual Core processors. When one processor is busy checking email, the other can be scanning for viruses. This is analogous to how brain hemispheres work.

### **1.2 OBJECTIVE OF PROJECT**

- i.** To analyze the Delta state of brainwave of UiTM Shah Alam students using questionnaire, EEG system and Motion Technology System.
- ii.** To observed the effect of the motion technology system in reducing the stress.