

**AUTOMATIC DETECTION OF MOTOR IMAGERY MOVEMENT
FOR NEURO-BASED HOME APPLIANCES SYSTEM**

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ACKNOWLEDGEMENT

Firstly, I would thanks to Allah S.W.T, Whom with His willing giving me the opportunity to complete my project for this semester.

Secondly, I would like to express my deepest gratitude to my supervisor Assoc. Prof. Datin Dr. Wahidah Mansor, who had guided me in a lot of task during completing this project. I also want to thanks lecturers and staffs of Electrical Engineering for their cooperation during my completion of the project for giving us valuable information, suggestions and guidance in the compilation and preparation project report.

Thanks and appreciation to my senior, society and others for their cooperation, encouragement, constructive suggestion and full of support for the report completion, from the beginning till the end. Also thanks to all of my friends and everyone, those have been contributed by supporting my work and help myself during the project progress till it is fully completed.

ABSTRACT

This project of Automatic Detection of Motor Imagery Movements for Neuro-Based Home Appliances System aims to design a protocol of recording EEG signals for controlling electronic devices using brain activities and to detect motor imagery movement from EEG signals automatically. For the motor imagery movement detection, 2 different protocol was design for both real and imagery grasping hand movement. EEG signals will be recorded by placing the electrodes at C3 and C4 using the 10 – 20 international system. The raw EEG data from the Open BCI will be extracted and it will be filtered and transform to Fast Fourier transform for further analysis in time-domain and spectrogram. From the analysis, the threshold was set at both real-time data and spectrogram for automatic detection of motor imagery movement that can be apply on neuro-based home appliances system.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

This chapter introduces about background study of Brain-Computer Interface (BCI) that has been widely used in our neurology research industry. It also describes the ability of the human brain signals to communicate with the machine by using a proper hardware tools and the important part of the brain that need be analyzed for obtaining EEG signals. Other than that, this chapter describes about the problem statements, objective and scope of work for this research paper.

1.1 BACKGROUND OF STUDY

Usually, people have a lot of works to do at their home such as cleaning and cooking. A lot of energy is needed to do these works. These issues can become quite a problem because it can affect our body condition especially when our body is already tired from our daily lives activities. However, with the help of emerging technology nowadays, a lot of works can be done more easily where a lot of machines and electronic devices has been created to help people to do their work. These technologies give a lot of advantages to the people because they do not need to use a lot of energy to complete certain works. For example, a washing machine to help people to wash their clothes with just only press a few buttons.

BCI (Brain-Computer Interface) acts as a channel for human brain to communicate between with a computer system. It allows its users to control external devices which are independent of peripheral nerves and muscles with brain activities.