

**Universiti Teknologi MARA**

**Dysphoria Recognition Based On EEG**

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## ABSTRACT

Dysphoria in general, can be defined as an affective state that is related to negative emotions whereas emotion is the observation of mental states. The examples of negative emotion are sad, fear and anger. Dysphoria may lead to depression and if untreated, it can result to severe mental health issues such as anxiety, bipolar, depression and schizophrenia, and acts as a catalyst to suicide and drug abuse. However, dysphoria is difficult to be detected because there is no empirical measurement to detect dysphoria making it almost difficult to achieve an optimal diagnosis. The purpose of this project is to provide an empirical measurement that can be used to detect dysphoria. The brain signals are captured using an electroencephalogram (EEG) to study the negative emotions related to dysphoria. Electroencephalogram (EEG) is the recording of the electric activity generated by the brain. The main objective of this project is to study dysphoria related features captured using electroencephalogram (EEG) and classified using multiple classifiers. The performances of the classifiers are then compared. The Mel-Frequency Cepstral Coefficient (MFCC) method is used to extract relevant feature and three classifier which are Multi-Layer Perceptron (MLP), Naïve Bayes (NB) and Random Forest (RF) are employed for classification. The accuracy of the three classifiers are compared to determine which classifier perform the best. Based on the experimental results, MLP perform better as compared to NB and RF. The finding indicated that emotion can be recognized and the tendency for stress identification is feasible.

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# CHAPTER 1

## INTRODUCTION

This chapter gives an overview of the project. Further explanation is provided for understanding of why the project is developed and the importance of developing the project. This research focuses on analysing human negative emotion in dysphoria using the data collected from electroencephalogram (EEG). At the end of this project, a test on the accuracy of dysphoria will be measured.

### 1.1 Background of Study

Everyone experience emotion in their everyday life. Emotion is the observation of mental states. There are two types of emotion, which are positive and negative emotions.

Examples of negative emotion such as sad, fear and anger. Factors that contribute to negative emotion such as unemployment, poverty, job climate, freedom and corruption (Gallup, 2014). All of these factors is a dominant issue nowadays because we are living in a stressful society.

Negative emotion can lower someone's spirit to go through the day. For example, feeling sad would make the individual having a bad mood during the whole day or maybe it could be continually to the following day. One of the scenario that may make people feel down is not having the physical body that what they imagine which is related to the gender dysphoria. Their assigned sex at birth did not match what their brain told and these people need a help because