ABSTRACT

In Human-Computer Interaction, audiovisual is very influential for physiological condition that affects human's feelings. This can be seen from human ability to feel different feelings while watching music video. This feeling occured because of the stimulus elicited from the music video, so that brain activity fluctuation happened and obtained certain brain signals characteristics. By using Electroencephalogram (EEG), we did a classification of brain signal characteristics in familiarity category. Familiarity is a state when human recognize something.

This research is using secondary data taken from DEAP: A Database for Emotion Analysis using Physiological Signals who has been through pre-processing methods. DEAP data has the amount of 32 data who represent 32 participants, with each data contains 40 trials and 32 channels. Dataset were then extracted using Hjorth Descriptor with the output of three features, to then be classified based on the familiar and unfamiliar class using Multilayer Perceptron (MLP). In DEAP dataset, there are data with imbalance class where the amount of unfamiliar data is not balance with the familiar data. Therefore, classification process is done by using the data from the best trial that has balance class to avoid misclassification.

The test is done with scenario where from 29 data used, 15 data is used as training data and 14 data is used as testing data. From the test result, the best accuracy gained in balance class is 78.57% in trial 1, 2 and 27 with Hjorth Descriptor feature combinations of activity, mobility and complexity. Two hidden layers with 12 neurons in each hidden layer and epoch with the amount of 1000 is also used in MLP.

Keyword: EEG, *familiar*, *Hjorth Descriptor*, *Multilayer Perceptron*.