ABSTRACT

BRAIN FATIGUE CLASSIFICATION FOR GAMER BASED ON EEG USING ARTIFICIAL NEURAL NETWORK BACK PROPAGATION

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Playing video games has a positive and negative effects to the human brain, especially in terms of attention, emotion and cognition. Indirectly, video game absorb an attention more than usual and cause the brain to do more on the visual parts. It affects the cognitive state of the brain and cause brain fatigue that increases periodically. It is therefore important to do a classification of brain fatigue while playing video games.

In this final assignment, the system is designed to be able to categorize the indication of brain fatigue that affects on gamers using Artificial Neural Network Backpropagation. the system is also designed based on Electroencephalography (EEG). Input system is a signal which obtained from the measurement using EEG from Pre-Frontal Cortex (PFC) and then that signals are used as training data and test data. The initial stage of the system is a pre-processing the training data and test data. then data would be extracted using Shannon Entropy (SE) method. After the feature obtained, that feature would be classified by Artificial Neural Network (ANN) Backpropagation algorithm. Output system is a final value from the feedforward process of neural network with weights that have been updated.

After a testing process, the system is generates an overall accuracy value of 43,33%. But the system is not good enough because the testing process for category B accuracy values is 20% and category C accuracy values is 10%.