ABSTRACT

Schizophrenia is a mental illness that makes it difficult for a person to think and behave clearly. The clinical examination in determining schizophrenia may take a long time, around 12 months to 36 months, depending on the interval of protocols. EEG is one of the alternatives, a neuroimaging technique that helps determining schizophrenia in patients. The method starts with downloading dataset from Kaggle which consists of 81 patients but then filtered down to 30 patients. The deep learning method in data preprocessing is called a Convolutional Neural Network (CNN). In addition, six optimizers would be used to help analyze and make the convolutional neural network model that has been made, which are Adam, Adadelta, Root Mean Square Propagation, Adagrad, Stochastic Gradient Descent, and Adamax. Between these six optimizers, the result is chosen based on the highest values of accuracy, sensitivity, specificity, precision, and F-measure, along with their models of loss and accuracy. Based on the conducted experiment result, the optimizer with the highest value was Root Mean Square Propagation, which has accuracy values of 0.8693, sensitivity values of 0.66, precision values of 0.74, specificity values of 0.67, and an F-measurement of 0.7. The conclusion is that Root Mean Square Propagation has the most suitable optimizer for the current dataset in identifying patients who have schizophrenia. For future work, the dataset needs to be added more to gain values for the parameters. Another method that could be used for the study is using a hybrid of deep learning between a convolutional neural network with long short-term memory.

Keywords: Schizophrenia, EEG, CNN, Optimizers, Deep Learning.