

ABSTRACT

Based on information contained in the Global Status Report on alcohol and health 2018, Indonesia's population reached 260,581,100 people. In the population, it was noted that 0.8% had alcohol-related disorders and 0.7% showed signs of alcohol dependence, in both men and women. Excessive alcohol consumption has very dangerous risks, including the occurrence of diseases such as cardiomyopathy, stroke, disorders of the heart, liver, and increased risk of cancer. Electroencephalography (EEG) technique is a reliable and commonly used method to measure brain activity, which reflects the condition of a person's brain. Research using EEG has helped in identifying and understanding brain abnormalities and their spread through visual analysis of the resulting data, which involves large volumes of data and has dynamic characteristics. Diagnosis with alcoholic patients can be seen from the movement of brain signals, however, the process is still carried out in a traditional way.

In this study, a system was created to classify alcoholic EEG signals using deep learning. There are 3 systems in this study. First, the process of improving image quality using histogram equalization. Second, the feature extraction process uses GLCM and GLDM. Third, Classification using CNN and ANN. The final result is a comparison of combinations of each trait extraction and classification method.

Performance testing was conducted three times for each classification method. Each testing included distance values of 1-5 with angles of 0°, 45°, 90°, and 135°, tested using epochs 25, 50, and 100. There were 12 final results compared, and the highest accuracy was achieved in the testing using the CNN algorithm with epoch 100 and utilizing GLCM feature extraction. In that particular testing, an accuracy of 92.5% was obtained at an angle of 135° and distance of 1.

Keywords : *Electroencephalography, Histogram Equalization GLCM, GLDM, Convolutional Neural Network, Artificial Neural Network.*