ABSTRACT

Parkinson's disease is a disease that attacks the human motor system and is a disease that is difficult to diagnose. To diagnose Parkinson's disease, we need a special method that can diagnose Parkinson's disease. To date, there is no single specific test to accurately diagnose Parkinson's disease in the body. The cause of this disease is the destruction of nerve cells called substantia nigra which functions to produce a compound called dopamine. Parkinson's sufferers usually experience muscle stiffness and have difficulty walking.

This research was conducted by classifying the signal recordings generated by the sensor from the Physiobank database. The 16 VGRF sensors are mounted on the legs while walking, then the results of these sensors will be processed using the principal component analysis (PCA) method to determine the characteristics of the data and random forest to classify the data. The amount of data and attributes contained in the database will be processed so that the data is simpler, but data variations are maintained, because variations and data characteristics will greatly affect the results of system accuracy.

This study aims to help early diagnose patients who are suspected of having Parkinson's disease. The system produced in this research is expected to help the process of diagnosing patients based on the patient's medical record. Reduction of data dimensions can be achieved using the PCA method, namely by changing the data dimensions by 0.142% of the main data. The random forest method can classify data well, this is achieved with a combination of the parameter n_estimator = 31 and max depth = 9. The best accuracy is 95.13% but the computation process takes 85 seconds, while the best computation time is obtained by changing the max depth parameter = 2 with a time of 68 seconds but with an accuracy of 71%.

Keywords: Parkinson Disease, Principal Component Analysis, Random Forest.