ABSTRACT

The patient of Parkinson's disease (PD) is facing a critical neurological disorder issue. Efficient and early prediction of people having PD is a key issue to improve patient's quality of life. The diagnosis of PD specifically in its initial stages is extremely complex and time-consuming. Thus, the accurate and efficient diagnosis of PD has been a significant challenge for medical experts and practitioners. In order to tackle this issue and to accurately diagnosis the patient of PD, we proposed a machine-learning-based prediction system. In the development of the proposed system, the support vector machine (SVM) was used as a predictive model for the prediction of PD. The L1-norm SVM of features selection was used for appropriate and highly related features selection for accurate target classification of PD and healthy people. The L1-norm SVM produced a new subset of features from the PD dataset based on a feature weight value. For the validation of the proposed system, the K-fold cross-validation method was used. In addition, the metrics of performance measures, such as accuracy, sensitivity, specificity, precision, F1 score, and execution time, were computed for model performance evaluation. The PD dataset was in this paper. The optimal accuracy achieved the best subset of the selected features that might be due to various contributions of the PD features. The experimental findings of this paper suggest that the proposed method can be used to accurately predict the PD and can be easily incorporated in healthcare for diagnosis purpose. Currently, the computer-based assisted predictive system is playing an important role to assist in PD recognition. In addition, the proposed approach fills in a gap on feature selection and classification using voice recordings data by properly matching the experimental design.