Implementation of Ensemble Method on Microarray Data in Predictive Modelling Of Schizophrenia Identification

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Abstract

Schizophrenia is a chronic mental illness that leads the patient to hallucinations and delusions with a prevalence of 0.4% worldwide. The importance early detection of Schizophrenia is tracking the pre-syndrome of Schizophrenia during the active phase, and could reduce psychosis symptomatic. However, the method sometimes cannot detect the symptoms accurately. As an alternative, machine learning can be implemented on microarray data for early detection. This study aimed to implement three ensemble methods, i.e., Random Forest (RF), Adaptive Boosting (AdaBoost), and Extreme Gradient Boosting (XGBoost) to identify Schizophrenia. Hyperparameter tuning was performed to improve the performance of the models. Based on the results, we found that the model 6, which is developed by the XGBoost method, performs better than other models with the value of accuracy and F1-score are 0.87 and 0.87, respectively.

Keywords: schizophrenia, ensemble method, microarray, disease detection