Classification of ADHD subgroup with recursive feature elimination for structural brain MRI.

Qureshi MN, Boreom Lee.


Abstract

This article reports the binary classification results of ADHD patients among three subgroups by using ADHD-200 dataset. We have proposed a modified feature selection approach using standard RFE-SVM model. Our results show the significance of the proposed method by making a comparison of J-statistics, F1-score and classification accuracy based on the feature selection from the original RFE-SVM vs. the proposed modification of RFE-SVM. In addition, we have also compared the number of features in each setting to achieve the highest accuracy. After ten-fold cross-validation, we have achieved 84.17% accuracy using a linear SVM classifier. Moreover, we have found significant anatomical regions that can serve as a potential biomarker for the ADHD subgroups classification.