Diagnosis and Evaluation of ADHD using MLP and SVM Classifiers

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Abstract

Objectives:
Attention Deficit Hyperactivity Disorder (ADHD) is the neurological childhood cerebral disorder that affects five to eight percent of school-aged children’s ability to control their behavior and pay attention to tasks.

Methods/analysis:
MLP and SVM Data mining classifiers to Diagnose and Evaluate the Attention Deficit Hyperactivity Disorder (ADHD) is proposed in this paper. It is characterized by problems with Inattention, impulsivity, and hyperactivity. School going children in the age group of 5-9 years is targeted and an ADHD data set with 105 data samples with 30 attributes is created from their parents and teachers under the guidance of physicians. The ADHD data set is preprocessed to remove duplicate records, missing data, noisy and inconsistent data and classified initially into NOADHD and ADHD. The ADHD samples are further classified into moderate ADHD (ADHDmod) and high ADHD (ADHDhigh) classes using MLP and SVM classifiers and their classification performance is evaluated with the carry of Performance Metrics, ROC curve and Accuracy measures using WEKA tool.

Findings:
The data set is experimented with WEKA tool and the performance of the classifiers is evaluated in terms of their classification accuracy using various measures like kappa statistics, Mean absolute error and Root mean squared error and ROC Area. It has been found that the accuracy of MLP algorithm is best one for ADHD data classification compared to SVM classifier.

Applications/Improvements:
Data mining techniques (MLP, SVM) are used to classify the group such as (Inattention, Hyperactivity, Impulsivity) normal and abnormal is diagnosed.