An enhanced Neural Network Ensemble for automatic sleep scoring

Akram AlSukker

Abstract

Improving the diversity of Neural Network Ensembles (NNE) plays an important role in creating robust classification systems in many fields. Several methods have been proposed in the literature to create such diversity using different sets of classifiers or using different portions of training/feature sets. Neural networks are often used as base classifiers in multiple classifier systems as they adapt easily to small changes in the training data, therefore creating diversity that is necessary to make the ensemble work. This paper presents a novel algorithm based on generating a set of classifiers such that each one of them is biased towards one of the target classes. This will improve the ensemble diversity and hence its performance. Results on sleep data sets show that the proposed method is able to outperform the traditional fusion algorithms of bagging and boosting.