Selection of classifiers and their combiners based on multi-objective optimization in ensemble learning

Ensemble learning is a method that improves the performance of classification problems. According to recent studies, selecting a subset of trained classifiers is better than all of available classifiers. By using these studies and evolutionary multi-objective optimization methods, we propose an ensemble learning approach called Multi-objective Optimization for Selecting and Combining Different Classifiers (MOSCDC) that selects the best classifiers and their combiners based on error and diversity objectives. MOSCDC strongly decreases the generalization error model. For optimization of error and diversity objectives in order to select classifiers and their combiners, we use multi-objective optimization methods based on genetic algorithm. In order to calculate the diversity of classifiers, we use Q-statistic method in our experiments. We compare the results of our experiment with related works on different datasets from UCI Machine Learning Repository and most of the time we obtain better results from the view point of classification accuracy and diversity.

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