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A comparative study of decision tree approaches to multi-class support vector machines.

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Summary: In this paper we review and evaluate recent decision tree approaches to multi-class SVM for benchmark and selfcollected image data sets. In addition, we compare the classification capabilities of hierarchical agglomerative and hierarchical divisive clustering approaches which recursively partition the set of classes with the standard pair wise classifier. We compare agglomerative clustering approaches based on the pair wise Euclidean distance of class means, pair wise misclassification rates for a binary SVM and a Mahalanobis-assignment as well as divisive clustering using k -Means to partition a set of classes based on a partition of the data or one-class- ν -SVM class representatives. Our results show that decision tree approaches achieve classification performance similar to the default multi-class SVM.

For the entire collection see [\[Zbl 1154.68012\]](#).

MSC:

68T05 Learning and adaptive systems in artificial intelligence

Keywords:

pattern recognition; decision tree; multi-class SVM