Classifier Combination in Speech Recognition

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Extended Abstract

In statistical pattern recognition [1][2] the principal task is to classify abstract data sets. Instead of using robust but computational expensive algorithms it is possible to combine 'weak' classifiers which can be employed solving complex classification tasks. Different classifiers trained on the same data set have different local behavior; each may have its own region in the feature space where it performs better than the others. It is also possible to train the same type of classifiers on various training sets having same characteristics probability distribution or feature spaces. To obtain the best possible separations, a combination of techniques may be used.

A fair number of combination schemes have been proposed in the literature [3], these schemes differing from each other in their architecture, the characteristics of the combiner, and the selection of the individual classifiers. In this comparative study we will examine the effectiveness of the commonly used hybrid schemes - especially for speech recognition problems - concentrating on cases which employ different combination of classifiers. Out of the algorithms available we chose the currently most frequently used classifiers: artificial neural networks, support vector machines [1], decision tree learners and Gaussian mixture models.

References

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