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FEATURE WEIGHTED MAHALANOBIS DISTANCE: IMPROVED ROBUSTNES FOR GAUSSIAN CLASSIFIERS (ThuAmOR7)

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Abstract :

Gaussian classifiers are strongly dependent on their underlying distance method, namely the Mahalanobis distance. Even though widely used, in the presence of noise this distance measure looses dramatically in performance, due to squaring down the distance of every single feature and the equal summation over all features. To overcome this drawbacks we propose to weight the different features in the Mahalanobis distance due to their distances after the variance normalization. The idea behind this is to give less weight to noisy features and high weight to noise free features which are more reliable. Thereafter, we replace the traditional distance measure in a Gaussian classifier with the proposed. In a series of experiments we show the improved noise robustness of Gaussian classifiers by the proposed modifications in contrast to the traditional approach.

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