The new confidence set method
for statistical classification

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To classify a new case into its true class, based on some measurements, is an important problem of statistical classification. Five classification methods have been studied. They are logistic regression, classification tree, Bayesian method, support vector machine and the new confidence set method. The new method constructs a confidence set for the true class for a new case by inverting the acceptance sets. The advantage of this method is that the probability of correct classification is not less than $1 - \alpha$. The methods are illustrated specifically with the well-known Iris data and applied to a data set for classifying patients as normal, having fibrosis or having cirrhosis based on some measurements on blood samples. The total misclassification error and sensitivity (true positive rate) are used for comparing the methods.