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Our three classifiers are: Voted Perceptron, Logit Boost, and Bayesian Logistic Regression (ClassificationViaRegression).

(In Table 1 and Table 2, VP=Voted Perceptron, LB= Logit Boost, BLR=Bayesian Logistic, Regression)

1. Voted Perceptron

1.1 VotedPerceptron is the name used in Weka class and in the literature "Y. Freund, R. E. Schapire: Large margin classification using the perceptron algorithm" it has the same name: voted-perceptron which is an algorithm for linear classification which combines Rosenblatt's perceptron algorithm with Helmbold and Warmuth's leave-one-out method. The voted-perceptron takes advantage of data that are linearly separable with large margins.

1.2 Parameters:
Number of iteration: number of iterations to be performed, which affects the learning time and final performance
Exponent for the polynomial kernel, which affects the classifier size.
Voted perceptron seems to be relatively sensitive to the number of iterations and exponent of polynomial kernel, with the most robust performance occurring for not large values. After experiments, we chose the number of iteration 1-20 and exponent 1-10 which seemed to strike a good balance between computing time and robustness.
Training time: within 1 second.

1.3 The final learner was constructed and configured with number of iteration 1-20 and exponent 1-10 varying according to different data condition.

2. Logit Boost

2.1 LogitBoost is the name used in Weka while the classifier has the same name in the literature "J. Friedman, T. Hastie, R. Tibshirani (1998). Additive Logistic Regression: a Statistical View of Boosting". This approach, based on best-first truncated tree induction can provide interpretable descriptions of the aggregate decision rule and often leads to better performance.

2.2 Number of folds for internal cross-validation, and number of runs for internal cross-validation, which affect the learning time and final performance.
Number of iterations which affect learning time.

Logit Boost seems to be relatively sensitive to the number of iterations but less sensitive to number of folds for internal cross-validation, and number of runs for internal cross-validation, at least for the given 12 data sets. The most robust performance occurring for relative large values. After experiments, we chose the number of iteration around 100 which seemed to strike a good balance between computing time and robustness.
Training time: within 1 second.

2.3 The final learner was constructed and configured with number of iteration 100 varying according to different data condition.

3. Bayesian Logistic Regression (ClassificationViaRegression)

3.1 ClassificationViaRegression is the name used in Weka while the classifier has the same name in the literature "E. Frank, Y. Wang, S. Inglis, G. Holmes, I.H. Witten (1998). Using model trees for classification". The approach can be applied to classification problems by employing a standard method of transforming a classification problem into a problem of function approximation.

3.2 Minimum number of instances per leaf which affects the size of the classifier. ClassificationViaRegression seems to be relatively sensitive to the minimum number of instances per, at least for the given 12 data sets. The most robust performance occurring for not large values. After experiments, we chose the number from 4(default) to about 50 which seemed to strike a good balance between computing time and robustness.
Training time: within 1 second.

3.3 The final learner was constructed and configured with number of 4, 20, 50 or 80 varying according to different data condition.

Table 1 shows the error values of the three classifiers and Naive Bayes classifier. Table 2 shows the values of errorVP/errorNB, errorLB/errorNB, errorBLR/errorNB and their average and maximum value.

Table 1

	errorNB	errorVP	errorLB	errorNLR
anneal	5.74%	23.31%	1.01%	3.04%
audiology	29.33%	30.67%	18.67%	26.67%
autos	55.88%	76.47%	47.06%	48.53%
balance-scale	32.04%	9.22%	17.96%	13.11%
breast-cancer	30.85%	23.40%	24.47%	21.28%
colic	19.01%	30.58%	17.36%	13.22%
credit-a	36.84%	37.72%	21.93%	23.68%

diabetes	24.51%	32.41%	24.90%	22.13%
glass	71.83%	66.20%	33.80%	35.21%
heart-c	18.00%	34.00%	12.00%	19%
hepatitis	11.76%	5.88%	9.80%	9.80%
hypothyroid	5.86%	6.99%	0.72%	0.96%

Table 2

	errorVP/errorNB	errorLB/errorNB	errorNLR/errorNB
	405.89%	17.65%	52.94%
	104.55%	63.64%	90.91%
	136.84%	84.21%	86.84%
	28.79%	56.06%	40.91%
	75.86%	79.31%	68.97%
	160.87%	91.30%	69.56%
	102.38%	59.52%	64.29%
	132.26%	101.61%	90.32%
	92.16%	47.06%	49.02%
	188.89%	66.67%	105.56%
	50.00%	83.33%	83.33%
	119.18%	12.33%	16.44%
average	133.14%	63.56%	68.26%
max	405.89%	101.61%	105.56%

Summary:

Among the classifiers we used, the best robustness was obtained by LogitBoost. We were able to improve its average robustness from 73.19% to 63.56% and improve it's maximum robustness from 104.35% to 101.61%.