CSE 472
Assignment 2: Ensemble Learning

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Cross validation results of adaboost with 30 rounds is shown in the following table. We can see that as the 'k' value of cross validation increases, accuracy also increases. This is expected because with increasing value of k, we get more training examples.

k value of cross validation	Accuracy(%)
5	95.8
10	95.9
20	96.5
leave-one-out	96.6

Table 1: Cross Validation Results of AdaBoost (with 30 rounds)

The following table compares accuracy of 3 different classifying schemes. We can see that boosting outperforms ID3 and decision tree stumps in terms of accuracy.

k value of cross validation		5	10	20	leave-one-out
Accuracy(%)	Boosting	95.8	95.9	96.5	96.6
	ID3	95.5	95.3	96	96.1
	Decision Tree Stump	91.6	91.2	91.7	93.4

Table 2: Performance comparison of Decision Tree Stump, Boosting (with 30 rounds) and ID3

The following table shows how performance of boosting varies if number of rounds is changed. As we can see, performance improves with increasing number of rounds.

k value of cross validation		5	10	20	leave-one-out
Accuracy(%)	30 rounds	95.8	95.9	96.5	96.6
	20 rounds	95.7	95.9	95.7	96
	10 rounds	95.4	96.1	95.6	95.1
	5 rounds	94.4	95.3	94.9	94.9

Table 3: Performance of AdaBoost with varying number of rounds