

A.

Naive Bayes - Breast Cancer:

True Positive: 34
True Negative: 171
False Positive: 30
False Negative: 51

Accuracy: Number of instances: 286
 Number of true predictions: 205
 Number of false predictions: 81
 The accuracy value: 71.67%
Error Rate: 28.33%
Sensitivity: 40%
Specificity: 85%
Precision: 53%
F1-score: 0.456
F0.5-score: 1.14
F2-score: 0.285

Naive Bayes - LED:

True Positive: 653
True Negative: 2065
False Positive: 167
False Negative: 336

Accuracy: Number of instances: 3221
 Number of true predictions: 2718
 Number of false predictions: 503
 The accuracy value: 84.38%
Error Rate: 15.62%
Sensitivity: 66%
Specificity: 92.5%
Precision: 79.6%
F1-score: 0.722
F0.5-score: 1.804
F2-score: 0.451

Naive Bayes - Poker:

True Positive: 1205
True Negative: 0
False Positive: 513
False Negative: 1

Accuracy: Number of instances: 1719
 Number of true predictions: 1205
 Number of false predictions: 514
 The accuracy value: 70.1%
Error Rate: 29.9%
Sensitivity: 99.9%
Specificity: 0%
Precision: 70.1%
F1-score: 0.824
F0.5-score: 2.06
F2-score: 0.515

AdaBoost - Breast Cancer:

True Positive: 61
True Negative: 217
False Positive: 3
False Negative: 5

Accuracy:	Number of instances: 286 Number of true predictions: 278 Number of false predictions: 8 The accuracy value: 97.17%
Error Rate:	2.83%
Sensitivity:	92.4%
Specificity:	98.6%
Precision:	95.3%
F1-score:	0.938
F0.5-score:	2.346
F2-score:	0.586

AdaBoost - LED:

True Positive: 804
True Negative: 2367
False Positive: 16
False Negative: 34

Accuracy:	Number of instances: 3221 Number of true predictions: 3171 Number of false predictions: 50 The accuracy value: 98.44%
Error Rate:	1.56%
Sensitivity:	96%
Specificity:	99.3%
Precision:	98%
F1-score:	0.97
F0.5-score:	2.42
F2-score:	0.606

AdaBoost - Poker:

True Positive: 1667
True Negative: 1
False Positive: 51
False Negative: 0

Accuracy:	Number of instances: 1719 Number of true predictions: 1668 Number of false predictions: 51 The accuracy value: 97.01%
Error Rate:	2.99%
Sensitivity:	100%
Specificity:	1.92%
Precision:	97%
F1-score:	0.985
F0.5-score:	2.46
F2-score:	0.615

B.

Yes, it did improve the accuracy rate. The main reason is that we assign and change weights every iteration. We increase weights to the true predictions and decrease weights to the false predictions. This is called machine learning.

Improvement of Breast Cancer: 25.5%

Improvement of LED: 14.06%

Improvement of Poker: 26.91%

The Poker dataset got the most improvement which is 26.91%. I think the lowest accuracy in Naive Bayes may be the main reason.

C.

LED got the highest accuracy in each of both classification methods.

I think the difference of the data format of the LED dataset may be the reason that leads to this result. It's attributes only have 0 or 1 two possibilities, which makes the classification much easier than other datasets.