1. **Preprocessing**

We checked for the missing values in the dataset and found none. While loading the dataset we ignored the header line as it was detected as data rather than column headings. We also converted the Class attribute to binary to make it easier for model to distinguish between result variables.

1. **Model Training and Tuning**
   1. **Training Setup:**

All three classifiers were trained with different sets of training instances: 1000 and 50-80%. This was done to find out how the number of training instances affect the model while also keeping an eye on the features used to train the model.

* 1. **Comparative Analysis:**

After training, we conducted a comparison of the classifiers under each setting. The comparison was made based on accuracy. This metric provides a straightforward indication of model effectiveness across different training sizes and feature settings.

1. Comparison of models under different settings:
   1. Training with 1000 Instances:
      1. Fused model Accuracy: 0.92

Confusion Matrix:

[[2035 147]

[ 130 1289]]

* + 1. Random Forest Accuracy: 0.93

Confusion Matrix:

[[2103 79]

[ 155 1264]]

* + 1. AdaBoost Accuracy: 0.91

Confusion Matrix:

[[2049 133]

[ 156 1263]]

* 1. Training with 50% Instances:
     1. Fused model Accuracy: 0.92

Confusion Matrix:

[[1279 122]

[ 52 848]]

* + 1. Random Forest Accuracy: 0.95

Confusion Matrix:

[[1350 51]

[ 64 836]]

* + 1. AdaBoost Accuracy: 0.93

Confusion Matrix:

[[1308 93]

[ 64 836]]

* 1. Training with 60% Instances:
     1. Fused model Accuracy: 0.93

Confusion Matrix:

[[1047 87]

[ 45 662]]

* + 1. Random Forest Accuracy: 0.95

Confusion Matrix:

[[1092 42]

[ 49 658]]

* + 1. AdaBoost Accuracy: 0.93

Confusion Matrix:

[[1060 74]

[ 44 663]]

* 1. Training with 70% Instances:
     1. Fused model Accuracy: 0.93

Confusion Matrix:

[[771 66]

[ 32 512]]

* + 1. Random Forest Accuracy: 0.94

Confusion Matrix:

[[802 35]

[ 43 501]]

* + 1. AdaBoost Accuracy: 0.93

Confusion Matrix:

[[776 61]

[ 38 506]]

* 1. Training with 80% Instances:
     1. Fused model Accuracy: 0.92

Confusion Matrix:

[[503 52]

[ 22 344]]

* + 1. Random Forest Accuracy: 0.94

Confusion Matrix:

[[529 26]

[ 26 340]]

* + 1. AdaBoost Accuracy: 0.92

Confusion Matrix:

[[522 33]

[ 35 331]]

From the following matrices we conclude that Random Forest worked slightly better than other algorithms. We can see a slight increase in accuracy as we increase the testing instances.