**Lab 5 Summary**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Naive Bayes**  **Algorithm** | **Accuracy** | **TP** | **FP** | **FN** | **TN** | **Sensitivity** | **Specificity** | **Precision** | **Recall** | **Area**  **Under**  **ROC** |
| **Multimonial** | 0.819672131147541 | 70 | **35** | **26** | **111** | 0.7291666666666666 | 0.6666666666666666 | 0.7602739726027398 | 0.8102189781021898 | 0.7384428223844283 |
| **Gaussian** | 0.8688524590163934 | **78** | **27** | **23** | **114** | 0.7291666666666666 | 0.6666666666666666 | 0.8085106382978723 | 0.8321167883211679 | 0.7874869655891554 |
| **Complement** | 0.819672131147541 | **73** | **32** | **31** | **106** | 0.7019230769230769 | 0.6952380952380952 | 0.7681159420289855 | 0.7737226277372263 | 0.7344803614876608 |
| **Bernoulli** | 0.8852459016393442 | **78** | **27** | **21** | **116** | 0.7878787878787878 | 0.7428571428571429 | 0.8111888111888111 | 0.8467153284671532 | 0.794786235662148 |
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Multiple Bayes Net Algorithm has been applied to data set and we have done a comparative analysis based on multiple evaluation metrics. The given table summarizes the metric scores for each of the algorithm. The dataset was applied to Multimonial NB, Gaussian NB, Complement NB, and Bernoulli NB. Each algorithm has been tested based evaluation metrics.

The Confusion metrics (TP, TN, FP and FN) has provided a insight into the most accurate algorithm. Bernoulli NB algorithm with FN=21 has the best results with this dataset. The dataset focuses on predicting heart attack. Hence the chances of a negative diagnosis in case of positive possibility of the person having heart attack should be least. Bernoulli NB has the least False Negative Value comparing to all the other algorithms.

The accuracy, precision score, sensitivity, specificity, recall and roc have a significant difference for the Bernoulli Algorithm compared to the other algorithm.

Concluding from the metrics and comparative analysis we can say that Bernoulli NB outputs the best results followed by Gaussian NB with close values of Confusion Metrics.