**DECISION TREE CLASSIFIER**

**CONFUSION MATRIX**

[[144 6]

[ 3 246]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 0.98 0.96 0.97 150

1 0.98 0.99 0.98 249

accuracy 0.98 399

macro avg 0.98 0.97 0.98 399

weighted avg 0.98 0.98 0.98 399

**The Best\_score value for best parameter {'C': 10, 'gamma': 'auto', 'kernel': 'linear'}:**

**0.9976171352074965**

**DECISION TREE CLASSIFIER**

**CONFUSION MATRIX**

[[150 0]

[ 0 249]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 1.00 1.00 1.00 150

1 1.00 1.00 1.00 249

accuracy 1.00 399

macro avg 1.00 1.00 1.00 399

weighted avg 1.00 1.00 1.00 399

**The Best\_score value for best parameter {'criterion': 'gini', 'max\_features': 'sqrt', 'splitter': 'random'}: 1.0**

**RANDOM FOREST CLASSIFIER**

**CONFUSION MATRIX**

[[150 0]

[ 0 249]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 1.00 1.00 1.00 150

1 1.00 1.00 1.00 249

accuracy 1.00 399

macro avg 1.00 1.00 1.00 399

weighted avg 1.00 1.00 1.00 399

**The Best\_score value for best parameter {'criterion': 'entropy', 'max\_features': 'log2', 'n\_estimators': 50}: 1.0**

**LOGISTIC REGRESSION**

**CONFUSION MATRIX**

[[148 2]

[ 1 248]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 0.99 0.99 0.99 150

1 0.99 1.00 0.99 249

accuracy 0.99 399

macro avg 0.99 0.99 0.99 399

weighted avg 0.99 0.99 0.99 399

**The Best\_score value for best parameter {'algorithm': 'auto', 'metric': 'minkowski', 'n\_neighbors': 1}: 1.0**

**K-NEAREST NEIGHBOR**

**CONFUSION MATRIX**

[[150 0]

[ 0 249]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 1.00 1.00 1.00 150

1 1.00 1.00 1.00 249

accuracy 1.00 399

macro avg 1.00 1.00 1.00 399

weighted avg 1.00 1.00 1.00 399

**The Best\_score value for best parameter {'algorithm': 'auto', 'metric': 'minkowski', 'n\_neighbors': 1}: 1.0**

**GAUSSIAN NB**

**CONFUSION MATRIX**

[[149 1]

[ 4 245]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 0.97 0.99 0.98 150

1 1.00 0.98 0.99 249

accuracy 0.99 399

macro avg 0.98 0.99 0.99 399

weighted avg 0.99 0.99 0.99 399

**The Best\_score value for best parameter {'priors': [0.1, 0.9], 'var\_smoothing': 1e-10}:**

**0.996532797858099**

**BERNOULLIS NB**

**CONFUSION MATRIX**

[[149 1]

[ 19 230]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 0.89 0.99 0.94 150

1 1.00 0.92 0.96 249

accuracy 0.95 399

macro avg 0.94 0.96 0.95 399

weighted avg 0.95 0.95 0.95 399

**The Best\_score value for best parameter {'alpha': 0.8, 'fit\_prior': True, 'force\_alpha': True}:**

**0.994016064257028**

**CATEGORICAL NB**

**CONFUSION MATRIX**

[[150 0]

[ 1 248]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 0.99 1.00 1.00 150

1 1.00 1.00 1.00 249

accuracy 1.00 399

macro avg 1.00 1.00 1.00 399

weighted avg 1.00 1.00 1.00 399

**The Best\_score value for best parameter {'alpha': 0.8, 'fit\_prior': True, 'force\_alpha': True}:**

**0.999946452476573**

**COMPLIMENT NB**

**CONFUSION MATRIX**

[[145 5]

[ 54 195]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 0.73 0.97 0.83 150

1 0.97 0.78 0.87 249

accuracy 0.85 399

macro avg 0.85 0.87 0.85 399

weighted avg 0.88 0.85 0.85 399

**The Best\_score value for best parameter {'alpha': 0.8, 'fit\_prior': True, 'force\_alpha': True}:**

**0.951619812583668**

**MULTINOMIAL NB**

**CONFUSION MATRIX**

[[145 5]

[ 54 195]]

**CLASSIFICATION REPORT**

precision recall f1-score support

0 0.73 0.97 0.83 150

1 0.97 0.78 0.87 249

accuracy 0.85 399

macro avg 0.85 0.87 0.85 399

weighted avg 0.88 0.85 0.85 399

**The Best\_score value for best parameter {'alpha': 0.8, 'fit\_prior': True, 'force\_alpha': True}:**

**0.951619812583668**

**Result:**

The Random Forest and Decision Tree have same results and I am deploying on Random Forest.

**The Best\_score value for best parameter {'criterion': 'entropy', 'max\_features': 'log2', 'n\_estimators': 50}: 1.0**