

Metrics for Decision Tree with max_depth = 25 :

Accuracy: 0.8830

Confusion Matrix:

```
[[ 55 18]
```

```
[ 4 111]]
```

Precision: 0.8605

Recall: 0.9652

F1 Score: 0.9098

Metrics for Decision Tree with max_depth = 50 :

Accuracy: 0.8777

Confusion Matrix:

```
[[ 54 19]
```

```
[ 4 111]]
```

Precision: 0.8538

Recall: 0.9652

F1 Score: 0.9061

Metrics for Decision Tree with max_depth = 75 :

Accuracy: 0.8777

Confusion Matrix:

```
[[ 56 17]
```

```
[ 6 109]]
```

Precision: 0.8651

Recall: 0.9478

F1 Score: 0.9046

Metrics for Decision Tree with max_depth = 100 :

Accuracy: 0.8883

Confusion Matrix:

```
[[ 55 18]
```

```
[ 3 112]]
```

Precision: 0.8615

Recall: 0.9739

F1 Score: 0.9143

Metrics for Decision Tree with max_depth = 1000 :

Accuracy: 0.8936

Confusion Matrix:

```
[[ 56 17]
```

```
[ 3 112]]
```

Precision: 0.8682

Recall: 0.9739

F1 Score: 0.9180

Metrics for Random Forest with n_estimators = 50 :

Accuracy: 0.9362

Confusion Matrix:

```
[[ 63 10]
```

```
[ 2 113]]
```

Precision: 0.9187

Recall: 0.9826

F1 Score: 0.9496

Metrics for Random Forest with n_estimators = 75 :

Metrics for Random Forest:

Accuracy: 0.9681

Confusion Matrix:

```
[[ 82  5]
```

```
[ 1 100]]
```

Precision: 0.9524

Recall: 0.9901

F1 Score: 0.9709

Metrics for Random Forest with n_estimators = 100 :

Accuracy: 0.9415

Confusion Matrix:

```
[[ 64  9]
```

```
[ 2 113]]
```

Precision: 0.9262

Recall: 0.9826

F1 Score: 0.9536

Metrics for Random Forest with n_estimators = 150 :

Accuracy: 0.9468

Confusion Matrix:

```
[[ 65  8]
```

```
[ 2 113]]
```

Precision: 0.9339

Recall: 0.9826

F1 Score: 0.9576

Metrics for Random Forest with n_estimators = 200 :

Metrics for Random Forest:

Accuracy: 0.9787

Confusion Matrix:

```
[[ 83  4]
```

```
[ 0 101]]
```

Precision: 0.9619

Recall: 1.0000

F1 Score: 0.9806

Metrics for AdaBoost with learning rate = 0.01 :

Accuracy: 0.9415

Confusion Matrix:

[[77 10]

[1 100]]

Precision: 0.9091

Recall: 0.9901

F1 Score: 0.9479

Metrics for AdaBoost with learning rate = 0.05 :

Accuracy: 0.9521

Confusion Matrix:

[[79 8]

[1 100]]

Precision: 0.9259

Recall: 0.9901

F1 Score: 0.9569

Metrics for AdaBoost with learning rate = 0.1 :

Accuracy: 0.9574

Confusion Matrix:

[[79 8]

[0 101]]

Precision: 0.9266

Recall: 1.0000

F1 Score: 0.9619

Metrics for AdaBoost with learning rate = 0.25 :

Accuracy: 0.9521

Confusion Matrix:

```
[[ 79  8]
```

```
[ 1 100]]
```

Precision: 0.9259

Recall: 0.9901

F1 Score: 0.9569

Metrics for AdaBoost with learning rate = 0.5 :

Accuracy: 0.9681

Confusion Matrix:

```
[[ 82  5]
```

```
[ 1 100]]
```

Precision: 0.9524

Recall: 0.9901

F1 Score: 0.9709