**מטלה- 1**

**חלק ב:-**

Decision Tree Experments:

1.**DecisionTreeClassifier():**

Accuracy: 0.9122807017543859

Precision: 0.9514563106796117

Recall: 0.9074074074074074

F1 Score: 0.9289099526066351

Confusion Matrix:

[[58 5]

[10 98]]

**2.** **DecisionTreeClassifier(criterion='entropy'):**

Accuracy: 0.9590643274853801

Precision: 0.954954954954955

Recall: 0.9814814814814815

F1 Score: 0.9680365296803652

Confusion Matrix:

[[ 58 5]

[ 2 106]]

**3. DecisionTreeClassifier(max\_depth=6):**

Accuracy: 0.9590643274853801

Precision: 0.9719626168224299

Recall: 0.9629629629629629

F1 Score: 0.9674418604651163

Confusion Matrix:

[[ 60 3]

[ 4 104]]

**4.DecisionTreeClassifier(random\_state=0):**

Accuracy: 0.9239766081871345

Precision: 0.9702970297029703

Recall: 0.9074074074074074

F1 Score: 0.937799043062201

Confusion Matrix:

[[60 3]

[10 98]]

**5.DecisionTreeClassifier(criterion='entropy',random\_state=0,** **max\_depth=6):**

Accuracy: 0.9649122807017544

Precision: 0.9636363636363636

Recall: 0.9814814814814815

F1 Score: 0.9724770642201835

Confusion Matrix: [[ 59 4]

[ 2 106]]

**6.** **DecisionTreeClassifier(criterion='entropy', max\_depth=6):**

Accuracy: 0.9590643274853801

Precision: 0.954954954954955

Recall: 0.9814814814814815

F1 Score: 0.9680365296803652

Confusion Matrix:

[[ 58 5]

[ 2 106]]

**7.** **DecisionTreeClassifier(randome\_state=0, max\_depth=6):**

Accuracy: 0.9415204678362573

Precision: 0.9622641509433962

Recall: 0.9444444444444444

F1 Score: 0.9532710280373832

Confusion Matrix:

[[ 59 4]

[ 6 102]

8. DecisionTreeClassifier(splitter='random',max\_depth=6):

Accuracy: 0.9415204678362573

Precision: 0.9454545454545454

Recall: 0.9629629629629629

F1 Score: 0.9541284403669725

Confusion Matrix:

[[ 57 6]

[ 4 104]]

**9. DecisionTreeClassifier(splitter='random', criterion='entropy'):**

Accuracy: 0.9064327485380117

Precision: 0.9423076923076923

Recall: 0.9074074074074074

F1 Score: 0.9245283018867925

Confusion Matrix:

[[57 6]

[10 98]]

Random Forest Experments:

**1.RandomForestClassifier():**

Accuracy: 0.9649122807017544

Precision: 0.9636363636363636

Recall: 0.9814814814814815

F1 Score: 0.9724770642201835

Confusion Matrix:

[[ 59 4]

[ 2 106]]

**2.RandomForestClassifier(criterion='entropy'):**

Accuracy: 0.9707602339181286

Precision: 0.963963963963964

Recall: 0.9907407407407407

F1 Score: 0.9771689497716894

Confusion Matrix:

[[ 59 4]

[ 1 107]]

**3.RandomForestClassifier(random\_state=0):**

Accuracy: 0.9707602339181286

Precision: 0.963963963963964

Recall: 0.9907407407407407

F1 Score: 0.9771689497716894

Confusion Matrix:

[[ 59 4]

[ 1 107]]

**4.RandomForestClassifier(max\_depth=6):**

Accuracy: 0.9649122807017544

Precision: 0.9636363636363636

Recall: 0.9814814814814815

F1 Score: 0.9724770642201835

Confusion Matrix:

[[ 59 4]

[ 2 106]]

**5.** **RandomForestClassifier(random\_state=0,max\_depth=6):**

Accuracy: 0.9707602339181286

Precision: 0.963963963963964

Recall: 0.9907407407407407

F1 Score: 0.9771689497716894

Confusion Matrix:

[[ 59 4]

[ 1 107]]

**6.RandomForestClassifier(criterion='entropy',random\_state=0):**

Accuracy: 0.9707602339181286

Precision: 0.963963963963964

Recall: 0.9907407407407407

F1 Score: 0.9771689497716894

Confusion Matrix:

[[ 59 4]

[ 1 107]]

**7.RandomForestClassifier(bootstrap=False):**

Accuracy: 0.9649122807017544

Precision: 0.9636363636363636

Recall: 0.9814814814814815

F1 Score: 0.9724770642201835

Confusion Matrix:

[[ 59 4]

[ 2 106]]

**8.RandomForestClassifier(criterion='entropy',bootstrap=False):**

Accuracy: 0.9649122807017544

Precision: 0.9636363636363636

Recall: 0.9814814814814815

F1 Score: 0.9724770642201835

Confusion Matrix:

[[ 59 4]

[ 2 106]

AdaBoost Experments:

**1.AdaBoostClassifier() :**

Accuracy: 0.9766081871345029

Precision: 0.9814814814814815

Recall: 0.9814814814814815

F1 Score: 0.9814814814814815

Confusion Matrix:

[[ 61 2]

[ 2 106]]

**2. AdaBoostClassifier(random\_state=0):**

Accuracy: 0.9649122807017544

Precision: 0.9636363636363636

Recall: 0.9814814814814815

F1 Score: 0.9724770642201835

Confusion Matrix:

[[ 59 4]

[ 2 106]]

**3. AdaBoostClassifier(learning\_rate=6.0):**

Accuracy: 0.9064327485380117

Precision: 0.9423076923076923

Recall: 0.9074074074074074

F1 Score: 0.9245283018867925

Confusion Matrix:

[[57 6]

[10 98]]

**4. AdaBoostClassifier(n\_estimators=100):**

Accuracy: 0.9824561403508771

Precision: 0.9906542056074766

Recall: 0.9814814814814815

F1 Score: 0.986046511627907

Confusion Matrix:

[[ 62 1]

[ 2 106]]

**5.AdaBoostClassifier(n\_estimators=100,random\_state=0):**

Accuracy: 0.9824561403508771

Precision: 0.9906542056074766

Recall: 0.9814814814814815

F1 Score: 0.986046511627907

Confusion Matrix:

[[ 62 1]

[ 2 106]]

**6.AdaBoostClassifier(n\_estimators=100,learning\_rate=6.0):**

Accuracy: 0.9122807017543859

Precision: 0.8974358974358975

Recall: 0.9722222222222222

F1 Score: 0.9333333333333333

Confusion Matrix:

[[ 51 12]

[ 3 105]]

**7.AdaBoostClassifier(random\_state=0,learning\_rate=6.0):**

Accuracy: 0.9064327485380117

Precision: 0.9423076923076923

Recall: 0.9074074074074074

F1 Score: 0.9245283018867925

Confusion Matrix:

[[57 6]

[10 98]]