Experiment-1.2

Student Name: Ashish Kumar
UID: 23MAI10008
Branch: CSE AIML
Section/Group: 23MAI-1
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Subject Code: 23CSH-621

Aim of the Experiment :

Train and test the classification performance of Tree based Supervised Learning Algorithms for the following classifiers:

a) Decision Tree

b) Neural Network

c) Naive Bayes

d) Random Forest

Analyze the difference in the performance of the classifiers using different parameters of Confusion Matrix.

Objective of the Experiment :

Task to be done for this experiment is that we have to create a Weather Table which includes attributes like outlook, temperature, humidity, windy and play. Then we will open the weather dataset in WEKA Tool and train and test the classification performance of classifiers like Decision Tree, Random Forest, Naive Bayes and Neural Network. We will analyze the difference in performance of classifiers using different parameters of Confusion Matrix.

Procedure/ Steps for Experiment :

Step 1: Open Start → Programs → Accessories → Notepad.

Step 2: Write the dataset of **Weather Table** in Notepad with all attributes and their value.

Step 3: After writing the dataset, save the file with **.arff** format.

Step 4: Now open the Weather dataset in the WEKA Too using **'Open file'** option.

Step 5: Now click on **'Classify'** tab to apply different types of classifiers on dataset.

A) Decision Tree:

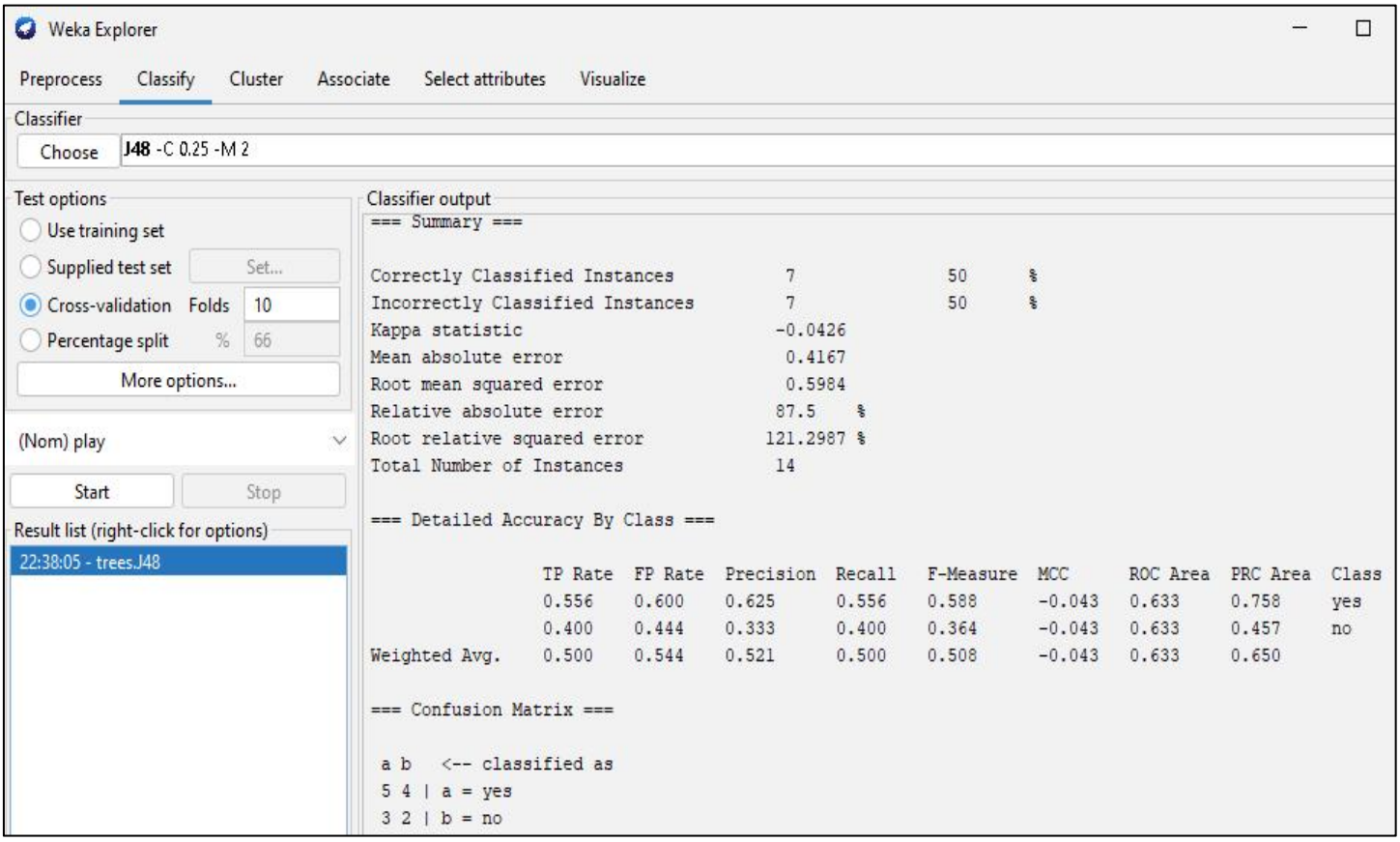
1) Go to **Classify tab** and click on **'Choose'** button in Classifier.

2) Under the **trees** section, select the **J48** classifier.

3) Set k-fold as 10 in cross validation.

4) Click on **'Start'** button to apply the J48 classifier.

5) Check the confusion matrix obtained for Decision Tree.



B) Random Forest:

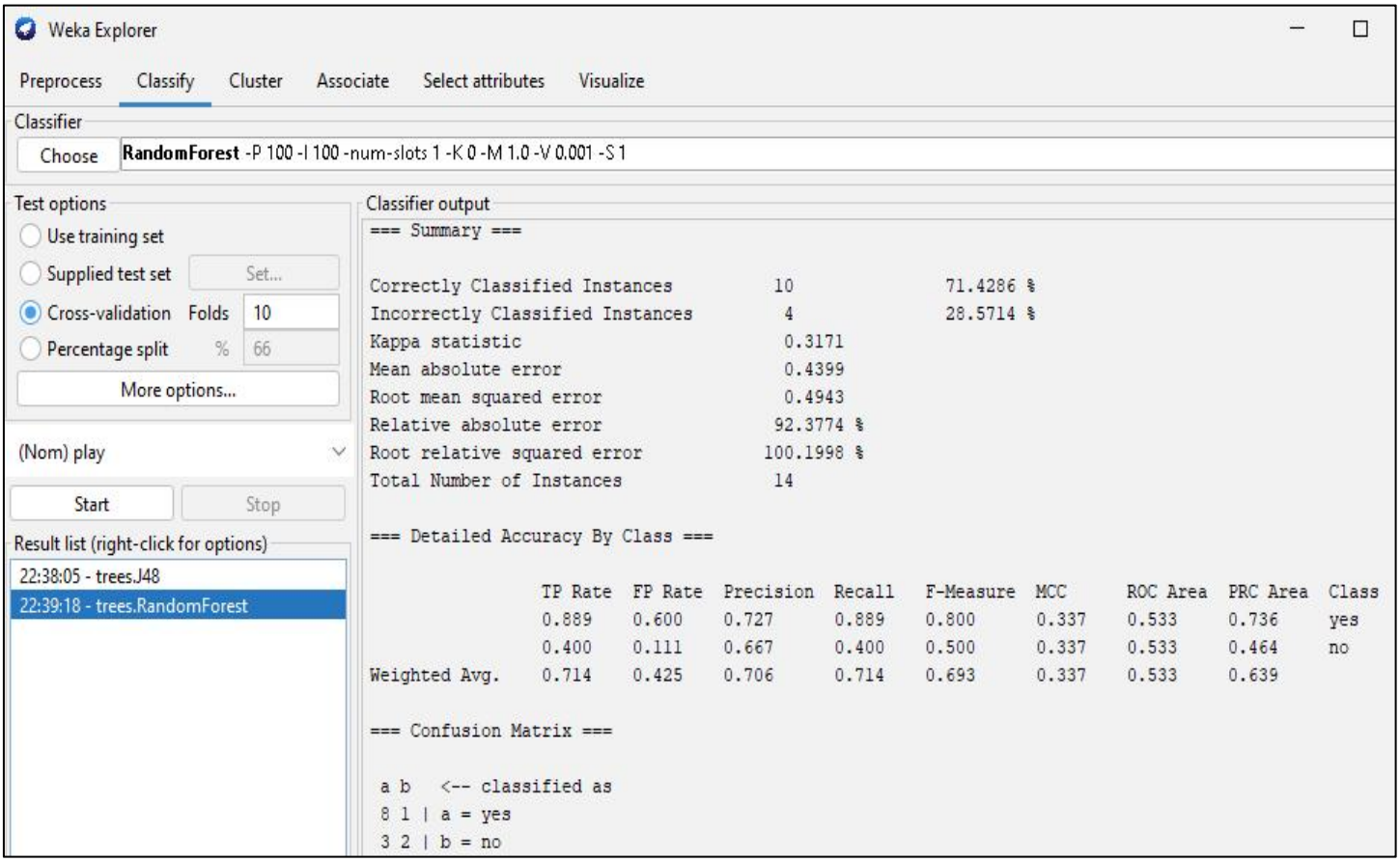
1) Go to **Classify tab** and click on **'Choose'** button in Classifier.

2) Under the **trees** section, select the **Random Forest**.

3) Set k-fold as 10 in cross validation.

4) Click on **'Start'** button to apply the Random Forest.

5) Check the confusion matrix obtained for Random Forest.



C) Naive Bayes:

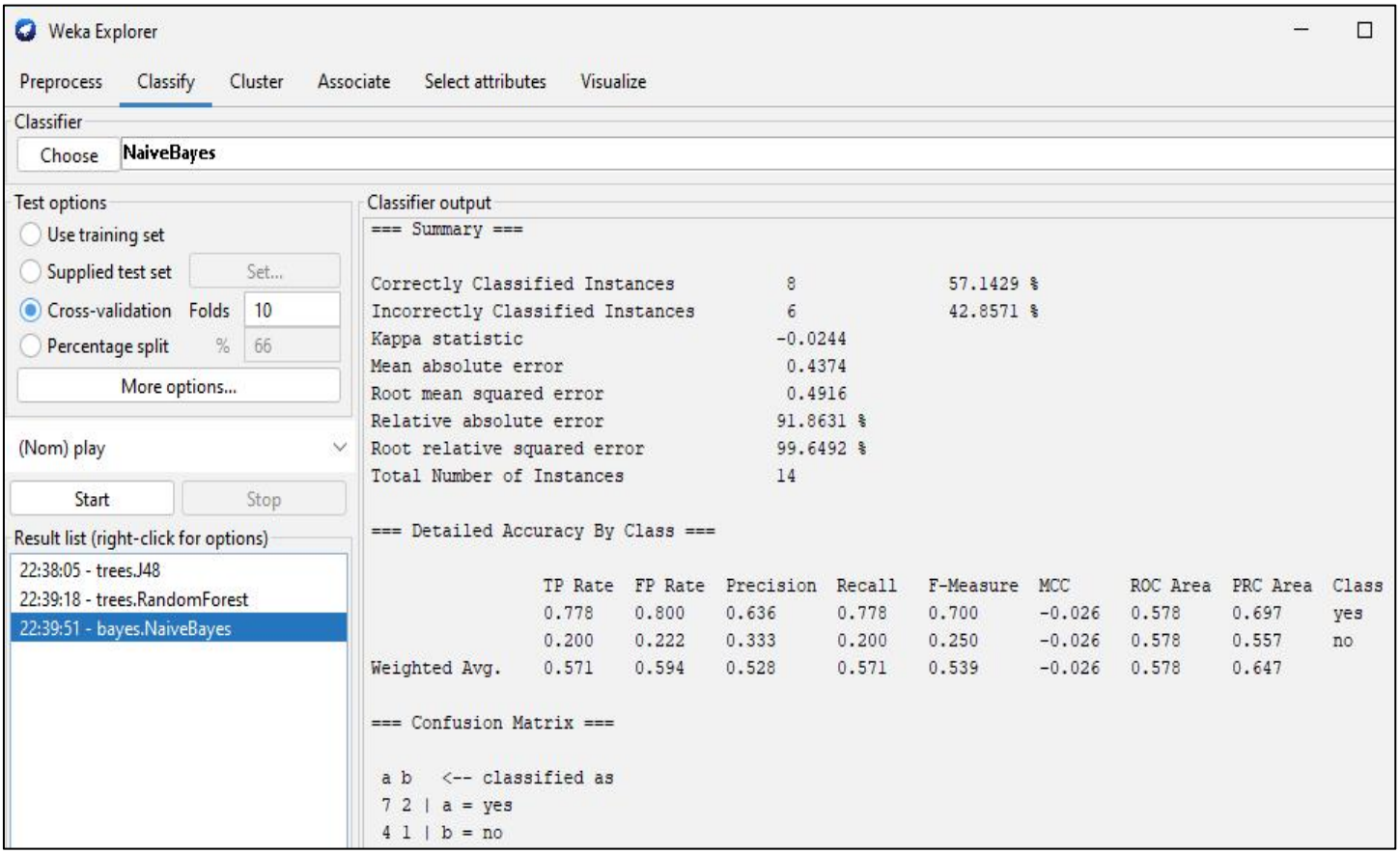
1) Go to **Classify tab** and click on **'Choose'** button in Classifier.

2) Under the **bayes** section, select the **Naive Bayes**.

3) Set k-fold as 10 in cross validation.

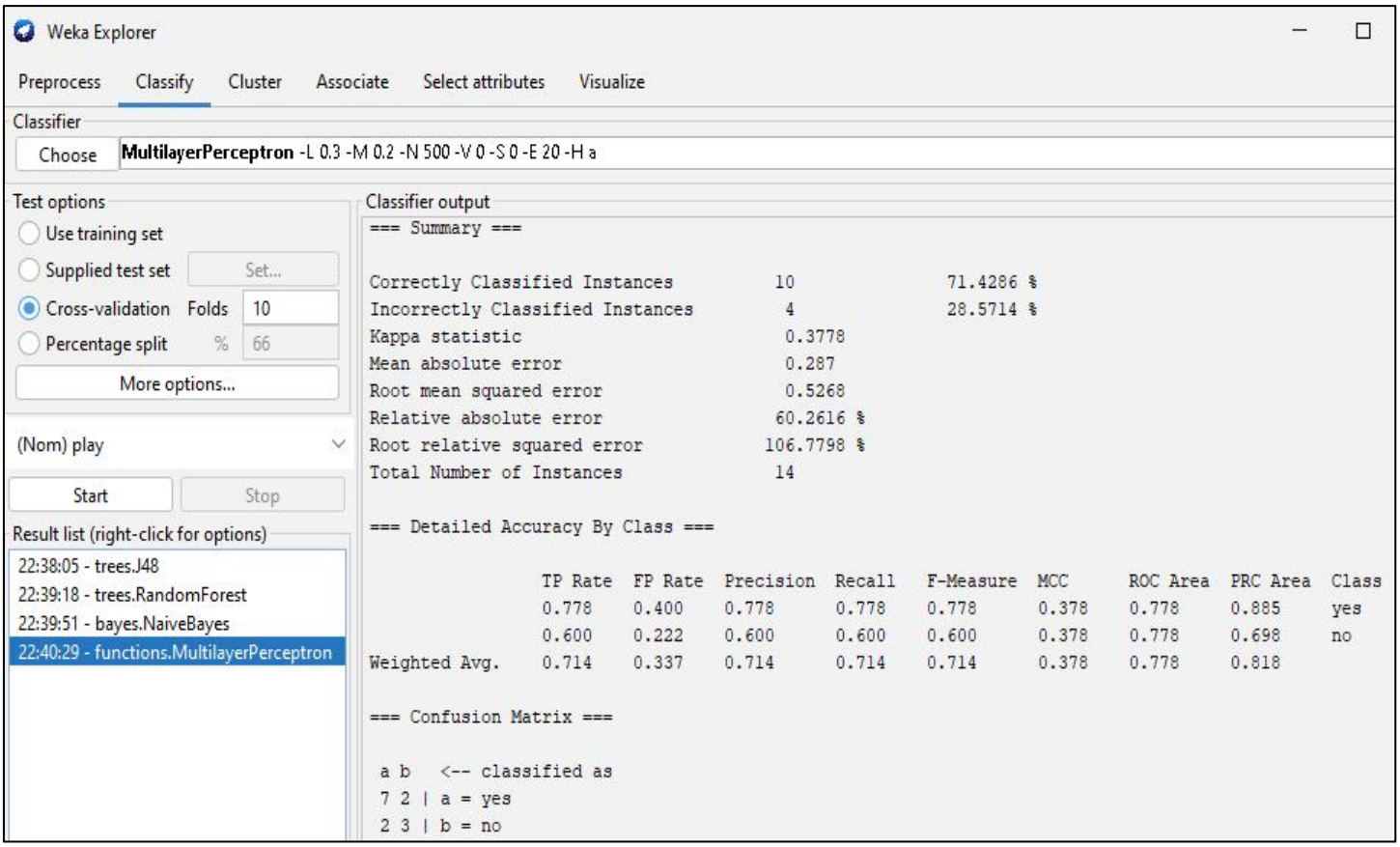
4) Click on **'Start'** button to apply the Naive Bayes.

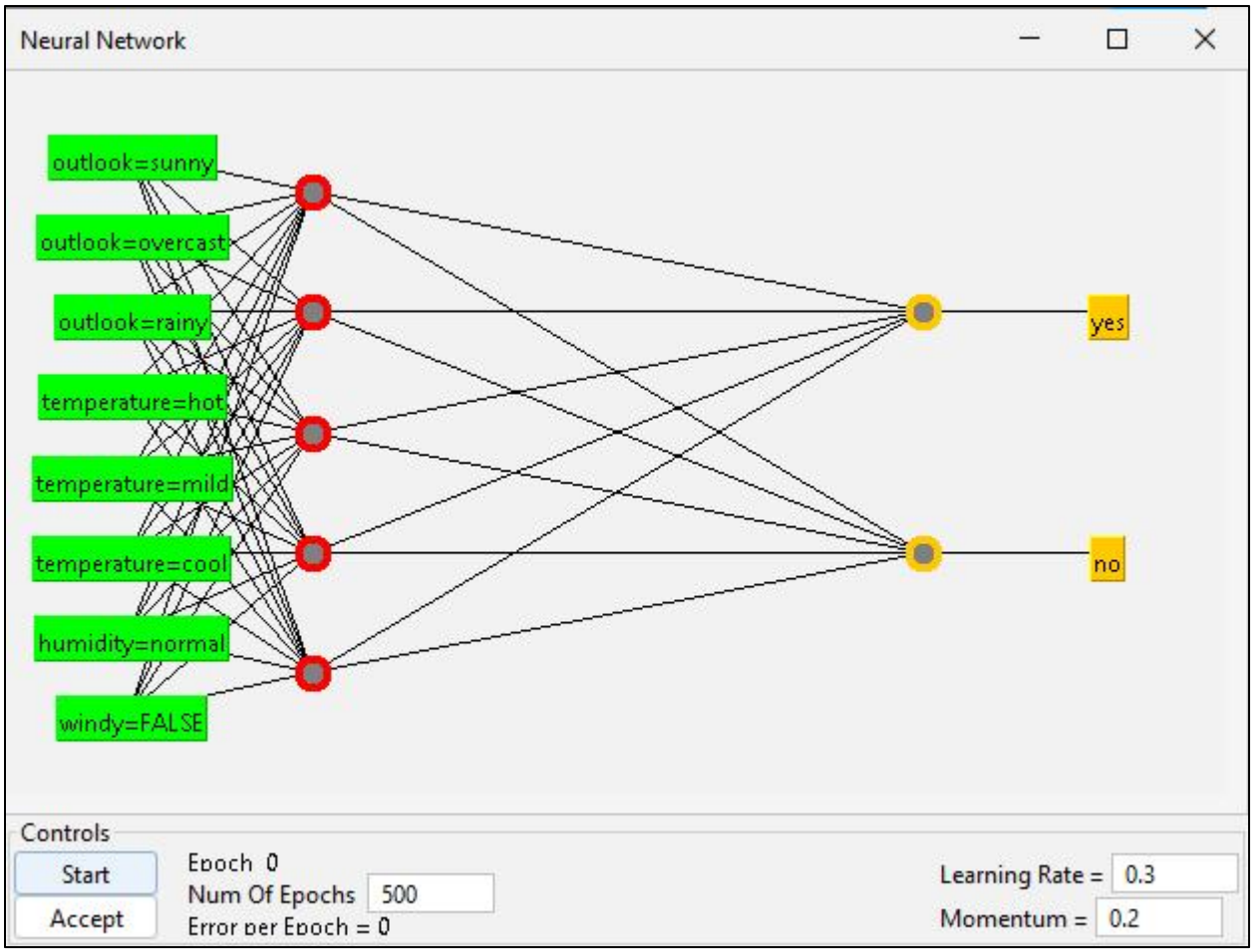
5) Check the confusion matrix obtained for Naive Bayes.



D) Neural Network:

1) Go to **Classify tab** and click on **'Choose'** button in Classifier.
2) Under the **functions** section, select the **Multilayer Perceptron**.
3) Set k-fold as 10 in cross validation.
4) Click on **Multilayer Perceptron** again. A dialog box will appear.
5) Set GUI as True and then Click on OK.
6) Click on **'Start'** button to apply the Multilayer Perceptron.
7) A box will appear which will show pictorial representation of neural network architecture.
8) Click on **'Start'** button and then accept.
9) Check the confusion matrix obtained for Multilayer Perceptron.





Learning outcomes (What I have learnt):

1. I learnt about the Weka Tool and its applications.

2. I learnt about how to create dataset in .arff format.

3. I learnt about how to open .arff format file in Weka Tool.

4. I learnt about different types of classifiers in Weka Tool.

5. I learnt about Confusion Matrix and its different parameters.