

Student Name :

Experiment No. :

Roll No.

Date :

7

Experiments - 09

- Objectives :- Implementation of decision tree classifier using metka explorer.
- Theory :- Decision tree learning is one of the most widely, useful & practical methods for inductive inference over supervised data.
- Steps :-
 - ① Open metka explorer & open the file & then select the itemset
 - ② Now select classify tab in tool & click on start button and then we can see the result of problem.
 - ③ Check main result of problem manually & result in metka by right clicking on the result & visualizing tree.
- Results - The solⁿ what we get manually & metka both are same.

Viva questions :-

- Q1) What is decision tree classifier algo is called eager learning
→ Decision tree classifier is called an eager learner because it builds the entire model during training before making predictions.

EXPERIMENT 9

The screenshot shows the Weka Explorer interface with the 'Classify' tab selected. A classifier named 'J48-C 0.25-M 2' is chosen. The 'Test options' section shows 'Cross-validation' with 10 folds. The 'Classifier output' pane displays the following text:

```
== Run information ==
Scheme: weka.classifiers.trees.J48 -c 0.25 -M 2
Relation: iris
Instances: 150
Attributes: 5
sepalength
sepalwidth
petallength
petalwidth
class
Test mode: 10-fold cross-validation
== Classifier model (full training set) ==
J48 pruned tree
-----
petalwidth <= 0.6: Iris-setosa (50.0)
petalwidth > 0.6
| petalwidth <= 1.7
| | petallength <= 4.9: Iris-versicolor (48.0/1.0)
| | petallength > 4.9
| | | petalwidth <= 1.5: Iris-virginica (3.0)
| | | petalwidth > 1.5: Iris-versicolor (3.0/1.0)
| | petalwidth > 1.7: Iris-virginica (46.0/1.0)

Number of Leaves : 5
Size of the tree : 9

Time taken to build model: 0.01 seconds
== Stratified cross-validation ==
== Summary ==
Correctly Classified Instances 144 96 %
Incorrectly Classified Instances 6 4 %
Kappa statistic 0.94
Mean absolute error 0.035
Root mean squared error 0.1586
Relative absolute error 7.8705 %
Root relative squared error 33.6353 %
Total Number of Instances 150
== Detailed Accuracy By Class ==
           TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class
Iris-setosa 0.980 0.000 1.000 0.980 0.990 0.985 0.990 0.987 Iris-setosa
          0.940 0.030 0.940 0.940 0.940 0.910 0.952 0.880 Iris-versicolor
          0.960 0.030 0.941 0.960 0.950 0.925 0.961 0.905 Iris-virginica
Weighted Avg. 0.960 0.020 0.960 0.960 0.960 0.940 0.968 0.924
== Confusion Matrix ==
a b c <- classified as
49 1 0 | a = Iris-setosa
0 47 2 | b = Iris-versicolor
0 2 48 | c = Iris-virginica
```

The status bar at the bottom left shows 'Status OK'.

Q2

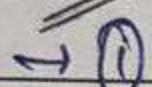
How is root node selected for creating decision tree?



The root node in a decision tree is selected based on feature with the highest information gain to minimize data separation.

Q3

Enlist any 5 application of decision tree classifier.



Medical diagnosis

②

Credit detection

③

Fraud detection

④

Customer segmentation

⑤

Spam filtering

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