

Experiment No.04

A.1 Aim: Implementation of Decision Tree Algorithm using J-48 in WEKA tool.

PART B

(PART B: TO BE COMPLETED BY STUDENTS)

(Students must submit the soft copy as per the following segments within two hours of the practical. The soft copy must be uploaded on the Blackboard or emailed to the concerned lab in charge faculties at the end of the practical in case there is no Blackboard access available)

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Class: Comps TE B	Batch: B3
Date of Experiment: 10/04/2021	Date of Submission: 10/04/2021
Grade:	

B.1 Software Code written by a student:

(Paste your problem statement related to your case study completed during the 2 hours of practice in the lab here)

@RELATION iris

@ATTRIBUTE sepallength REAL
@ATTRIBUTE sepalwidth REAL
@ATTRIBUTE petallength REAL
@ATTRIBUTE petalwidth REAL
@ATTRIBUTE class {Iris-setosa,Iris-versicolor,Iris-virginica}

@DATA

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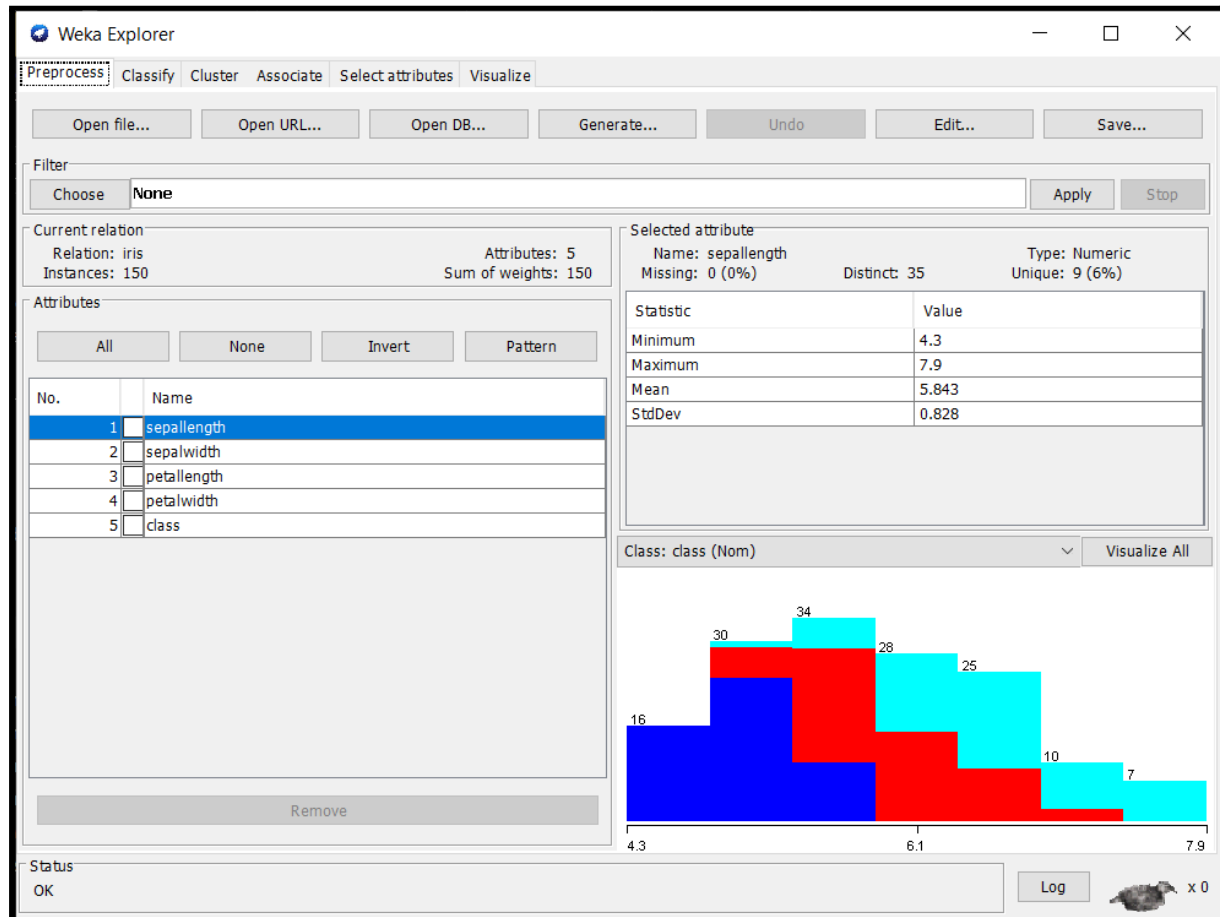
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6.2,3.4,5.4,2.3,Iris-virginica
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%
%
%

B.2 Input and Output:

(Paste your program input and output in the following format, If there is an error then paste the specific error in the output part. In case of an error with the due permission of the faculty, an extension can be given to submit the error-free code with output in due course of time. Students will be graded accordingly.)



Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Classifier: Choose **J48 -C 0.25 -M 2**

Test options:

- ☐ Use training set
- ☐ Supplied test set **Set...**
- ☒ Cross-validation Folds **10**
- ☐ Percentage split % **66**
- More options...**

(Nom) class

Start **Stop**

Result list (right-click for options):

17:00:52 - trees.J48

Classifier output:

```

=== Run information ===

Scheme:      weka.classifiers.trees.J48 -C 0.25 -M 2
Relation:    iris
Instances:   150
Attributes:  5
    sepalwidth
    sepalwidth
    petalwidth
    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
|   |   petalwidth <= 4.9: Iris-versicolor (48.0/1.0)
|   |   petalwidth > 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

```

Status: OK **Log** x 0

Weka Explorer

Preprocess Classify Cluster Associate Select attributes Visualize

Classifier: Choose **J48 -C 0.25 -M 2**

Test options:

- ☐ Use training set
- ☐ Supplied test set **Set...**
- ☒ Cross-validation Folds **10**
- ☐ Percentage split % **66**
- More options...**

(Nom) class

Start **Stop**

Result list (right-click for options):

17:00:52 - trees.J48

Classifier output:

```

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 ===

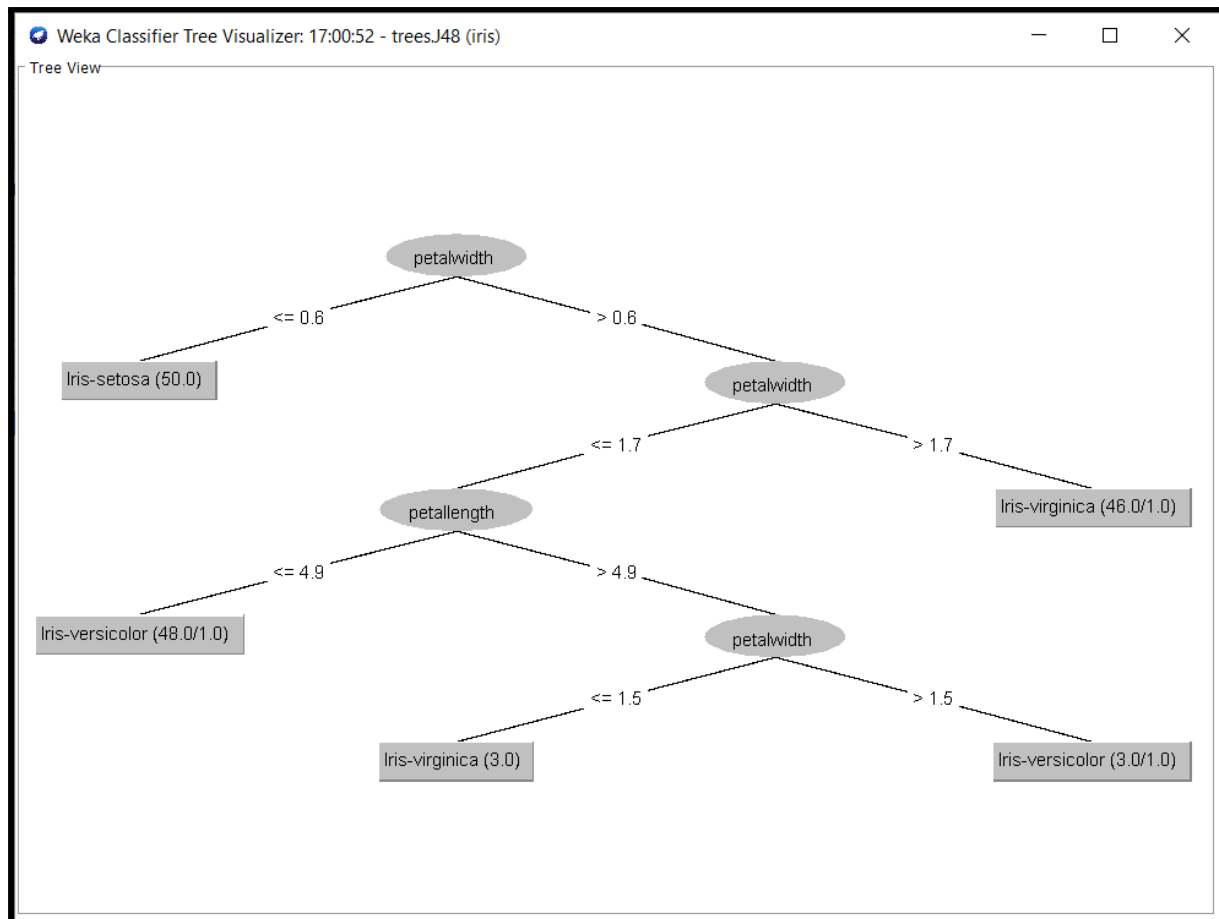
          TP Rate  FP Rate  Precision  Recall  F-Measure  MCC   ROC Area  PRC Area  Class
          0.980    0.000    1.000     0.980    0.990     0.985    0.990    0.987    Iris-setosa
          0.940    0.030    0.940     0.940    0.940     0.910    0.952    0.880    Iris-versicolor
          0.960    0.020    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  3 | b = Iris-versicolor
 0  2 48 | c = Iris-virginica

```

Status: OK **Log** x 0



B.3 Observations and learning:

(Students are expected to comment on the output obtained with clear observations and learning for each task/ subpart assigned)

In this experiment, we use of j-48 classifier in the Weka tool. Data is already available in AIFF format. This document assumes that appropriate data preprocessing has been performed.

B.4 Conclusion:

(Students must write the conclusion as per the attainment of individual outcome listed above and learning/observation noted in section B.3)

After completing this Experiment we can use the j-48 classifier in the Weka tool.

B.5 Question of Curiosity

(To be answered by the student based on the practical performed and learning/observations)

1. Draw the tree according to the classifier output and answers the following questions:

a. What is the depth of the tree?

Ans: 2

b. How many leaf nodes are there in the tree?

Ans: 4

c. How many tree nodes?

Ans: 5