25/11/2020 **Mohd. Aftab Alam**
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EXPERIMENT 7

Aim: To explore two graphs and view their arff file and apply an algorithm on them.

Theory:

We will use weather.arff and weather.nominal.arff files for the following experiment and use a classification algorithm on them.

Steps for exploring a graph:

1. Open Weka
2. Go to Applications then Explorer
3. In Pre-processor click on 'open file'
4. Set path to 'C:\Program Files\Weka-3-8-4\data' then select the file you want to view the graph for
5. Click on 'Visualize All'

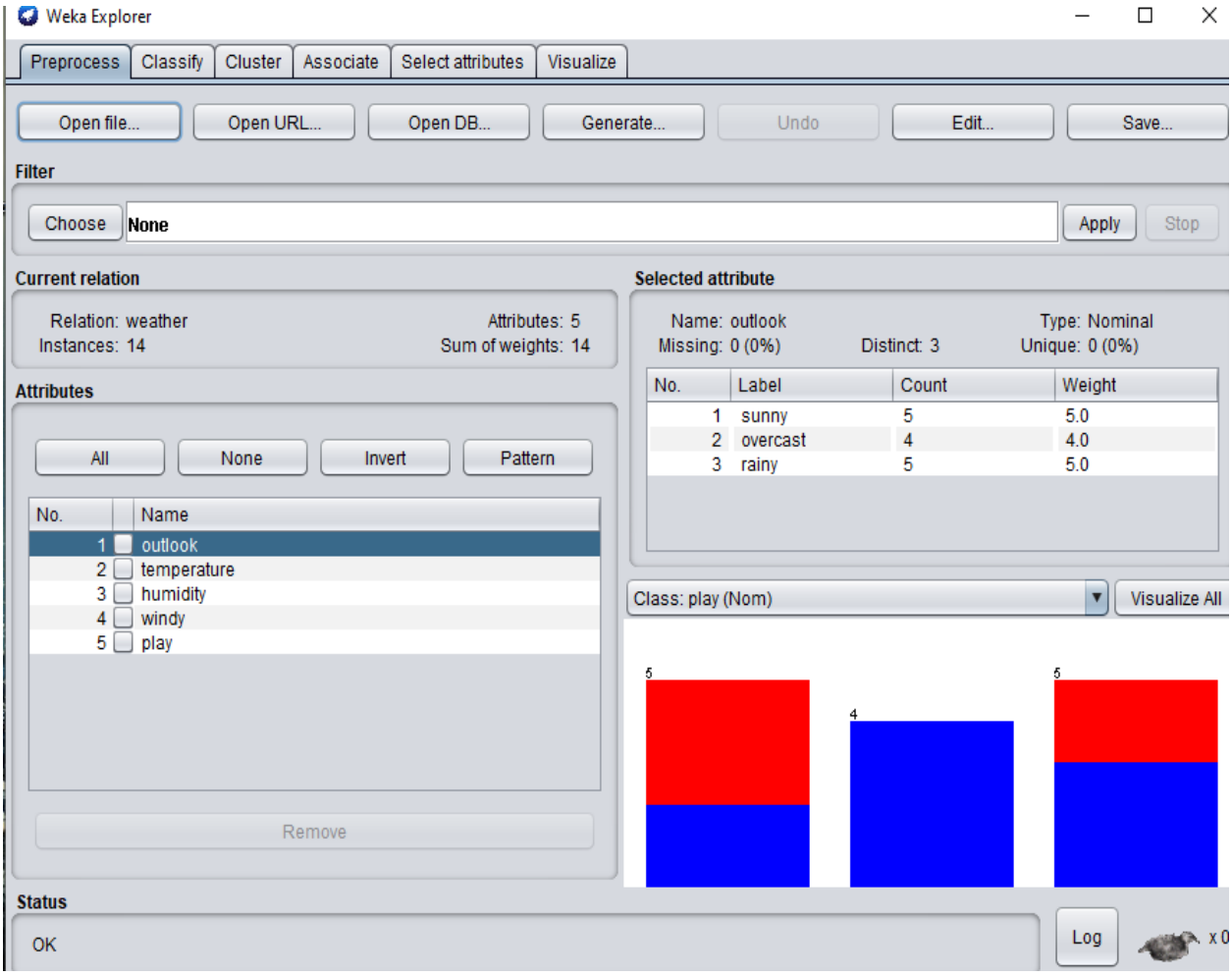

Fig: weather.arff file in Weka

Output: Graph Visualization of two files:

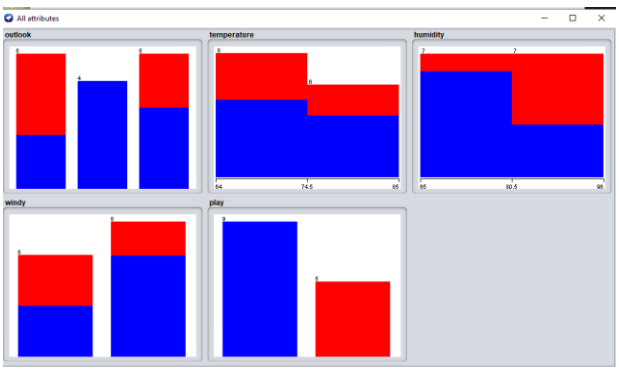

Fig: Graph for weather.arff

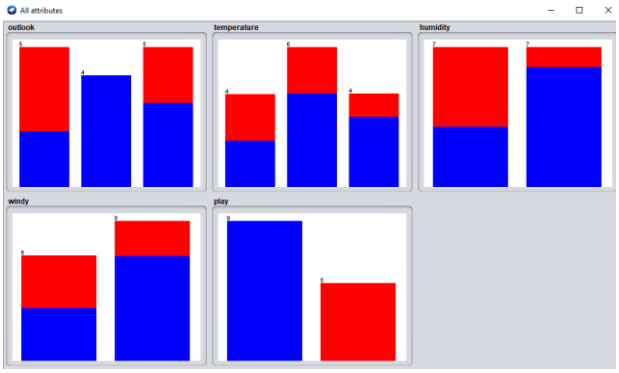

Fig: Graph for weather.nominal.arff

Steps for viewing the arff file's database:

1. Go to Tools and click on Arff Viewer
2. Go to Files and Open the file you want to view from the data folder
3. Choose weather.arff & weather.nominal.arff

Output: Database of two arff files:

ARFF-Viewer - C:\Program Files\Weka-3-8-4\data\weather.

File Edit View

weather.nominal.arff

Relation: weather.symbolic

No.	1: outlook Nominal	2: temperature Nominal	3: humidity Nominal	4: windy Nominal	5: **play** Nominal
1	sunny	hot	high	FALSE	no
2	sunny	hot	high	TRUE	no
3	overcast	hot	high	FALSE	yes
4	rainy	mild	high	FALSE	yes
5	rainy	cool	normal	FALSE	yes
6	rainy	cool	normal	TRUE	no
7	overcast	cool	normal	TRUE	yes
8	sunny	mild	high	FALSE	no
9	sunny	cool	normal	FALSE	yes
10	rainy	mild	normal	FALSE	yes
11	sunny	mild	normal	TRUE	yes
12	overcast	mild	high	TRUE	yes
13	overcast	hot	normal	FALSE	yes
14	rainy	mild	high	TRUE	no

Fig: Database View of weather.arff

ARFF-Viewer - C:\Program Files\Weka-3-8-4\data\weather.

File Edit View

weather.numeric.arff

Relation: weather

No.	1: outlook Nominal	2: temperature Numeric	3: humidity Numeric	4: windy Nominal	5: **play** Nominal
1	sunny	85.0	85.0	FALSE	no
2	sunny	80.0	90.0	TRUE	no
3	overcast	83.0	86.0	FALSE	yes
4	rainy	70.0	96.0	FALSE	yes
5	rainy	68.0	80.0	FALSE	yes
6	rainy	65.0	70.0	TRUE	no
7	overcast	64.0	65.0	TRUE	yes
8	sunny	72.0	95.0	FALSE	no
9	sunny	69.0	70.0	FALSE	yes
10	rainy	75.0	80.0	FALSE	yes
11	sunny	75.0	70.0	TRUE	yes
12	overcast	72.0	90.0	TRUE	yes
13	overcast	81.0	75.0	FALSE	yes
14	rainy	71.0	91.0	TRUE	no

Fig: Database View of weather.nominal.arff

Steps for applying an algorithm to the arff file:

1. Go to Classify
2. Choose OneR-B6 Algorithm and click Start to apply it
3. Right-click on the result list.
4. Click on Visualize Cost Curve (yes)

Output: Classifier Output of two arff files:

```
=== Run information ===
Scheme:       weka.classifiers.rules.OneR -B 6 Relation:     weather
Instances:    14
Attributes:   5
outlook temperature humidity windy
play
Test mode:    10-fold cross-validation
=== Classifier model (full training set) === outlook:
sunny -> no overcast    -> yes rainy -> yes
(10/14 instances correct)
Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===
Correctly Classified Instances  6       42.8571 %
Incorrectly Classified Instances        8       57.1429 %
Kappa statistic -0.2444 Mean absolute error             0.5714

Root mean squared error 0.7559
Relative absolute error 120     %
Root relative squared error     153.2194 %
Total Number of Instances       14
=== Detailed Accuracy By Class ===
TP Rate  FP Rate Precision Recall       F-Measure MCC   ROC Area PRC Area Class
0.556   0.800   0.556   0.556   0.556   -0.244  0.378   0.594   yes
0.200   0.444   0.200   0.200   0.200   -0.244  0.378   0.326   no
Weighted Avg.   0.429   0.673   0.429   0.429   0.429   -0.244  0.378
0.498
=== Confusion Matrix === a b    <-- classified as
5 4 | a = yes
4 1 | b = no
```

Classifier Output of weather.arff

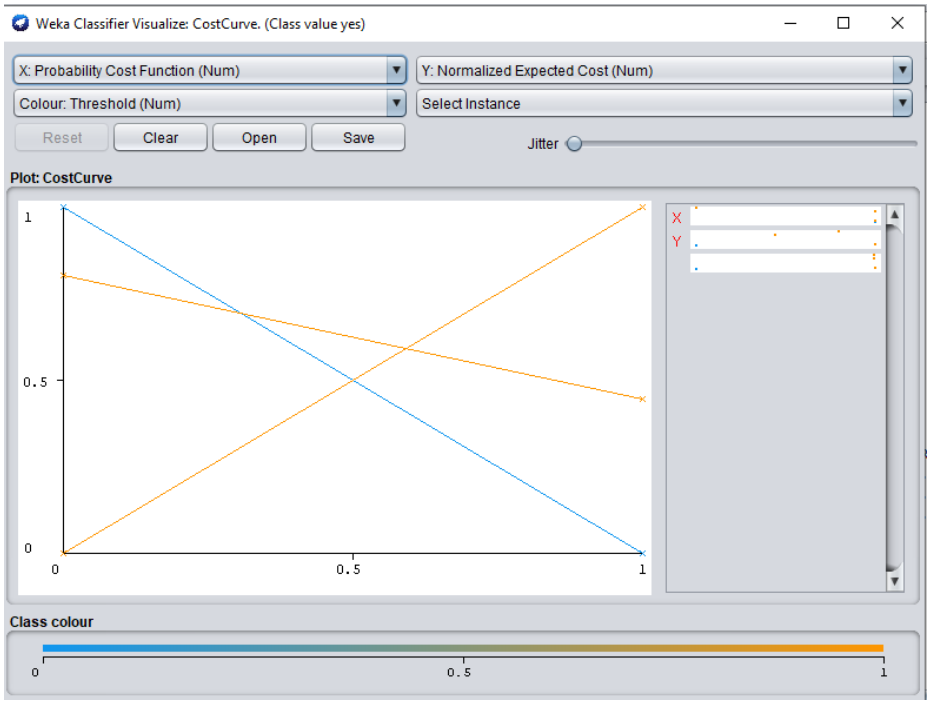

Fig: Cost Curve of weather.arff

```
=== Run information ===

Scheme:       weka.classifiers.rules.OneR -B 6 Relation:     weather.symbolic
Instances:    14
Attributes:   5
outlook temperature humidity windy
play
Test mode:    10-fold cross-validation
=== Classifier model (full training set) === outlook:
sunny -> no overcast    -> yes rainy -> yes
(10/14 instances correct)

Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===
Correctly Classified Instances  6       42.8571 %
Incorrectly Classified Instances        8       57.1429 %
Kappa statistic -0.1429
Mean absolute error     0.5714
Root mean squared error 0.7559
Relative absolute error 120     %
Root relative squared error     153.2194 %

Total Number of Instances       14

=== Detailed Accuracy By Class ===
TP Rate  FP Rate Precision Recall       F-Measure MCC   ROC Area PRC Area Class
0.444   0.600   0.571   0.444   0.500   -0.149  0.422   0.611   yes
0.400   0.556   0.286   0.400   0.333   -0.149  0.422   0.329   no
Weighted Avg.   0.429   0.584   0.469   0.429   0.440   -0.149  0.422
0.510
=== Confusion Matrix === a b    <-- classified as
4 5 | a = yes
3 2 | b = no
```

Classifier Output of weather.nominal.arff

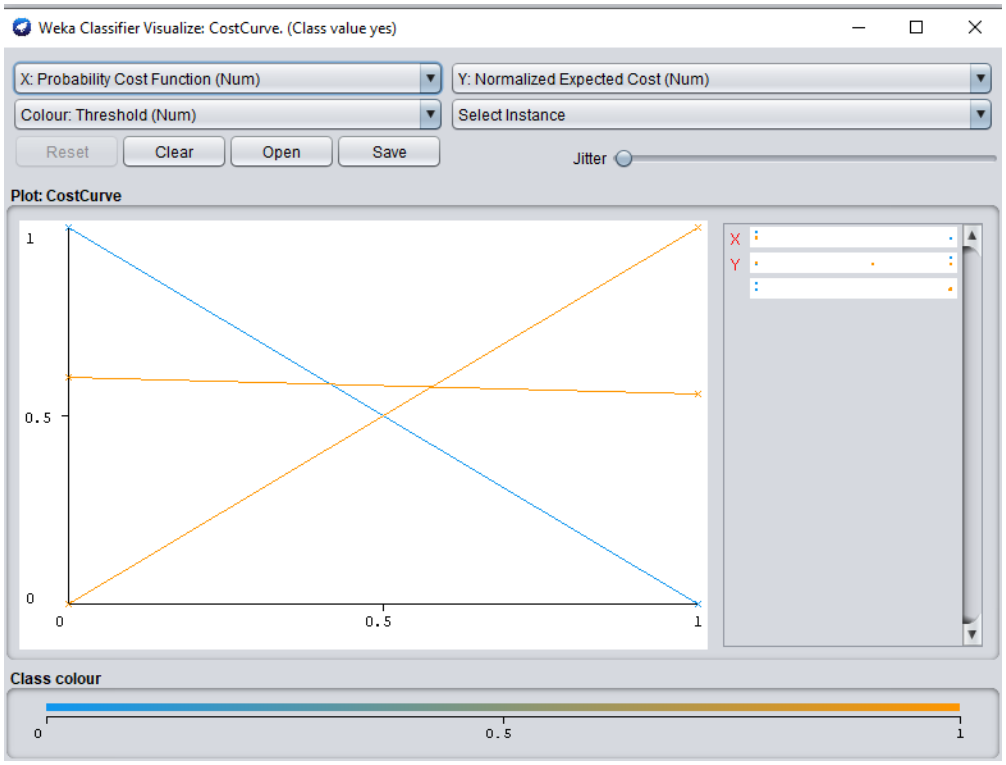

Fig: Cost Curve of weather.nominal.arff