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Source Code

Source code dilampirkan didalam folder src.

Hasil Eksekusi Terhadap Data Tes

```
========================================================================
Data Set : iris.arff
Classifier : ID3 Weka
========================================================================
Exception in thread "main" weka.core.UnsupportedAttributeTypeException:
weka.classifiers.trees.Id3: Cannot handle numeric attributes!
      at weka.core.Capabilities.test(Capabilities.java:954)
      at weka.core.Capabilities.test(Capabilities.java:869)
      at weka.core.Capabilities.test(Capabilities.java:1085)
      at weka.core.Capabilities.test(Capabilities.java:1023)
      at weka.core.Capabilities.testWithFail(Capabilities.java:1302)
      at weka.classifiers.trees.Id3.buildClassifier(Id3.java:166)
      at com.company.WekaJava.buildClassifier(WekaJava.java:130)
      at com.company.Main.main(Main.java:18)
      at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
      at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java
:62)
      at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorI
mpl.java:43)
      at java.lang.reflect.Method.invoke(Method.java:497)
      at
com.intellij.rt.execution.application.AppMain.main(AppMain.java:140)
========================================================================
Data Set : iris.arff
Classifier : J48 Weka
========================================================================
=== Test Evaluation ===

Correctly Classified Instances        147               98      %
Incorrectly Classified Instances        3                2      %
Kappa statistic                        0.97
Mean absolute error                    0.0233
Root mean squared error                0.108
Relative absolute error                5.2482 %
Root relative squared error           22.9089 %
Total Number of Instances             150


=== Detailed Accuracy By Class ===

              TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area  Class
                1         0         1          1         1           1
Iris-setosa
                0.98      0.02      0.961      0.98      0.97        0.99
Iris-versicolor
                0.96      0.01      0.98       0.96      0.97        0.99
Iris-virginica
Weighted Avg.   0.98      0.01      0.98       0.98      0.98
0.993
```

```
=== Confusion Matrix ===

  a  b  c   <-- classified as
 50  0  0 |  a = Iris-setosa
  0 49  1 |  b = Iris-versicolor
  0  2 48 |  c = Iris-virginica

=== 10-fold cross validation ===

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   ROC
Area   Class
                 0.98      0         1           0.98     0.99        0.99
Iris-setosa
                 0.94      0.03      0.94        0.94     0.94
0.952    Iris-versicolor
                 0.96      0.03      0.941       0.96     0.95
0.961    Iris-virginica
Weighted Avg.    0.96      0.02      0.96        0.96     0.96
0.968

=== 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

=== percentage split 70.0% ===

Correctly Classified Instances          43               95.5556 %
Incorrectly Classified Instances         2                4.4444 %
Kappa statistic                          0.9331
Mean absolute error                      0.0416
Root mean squared error                  0.1682
Relative absolute error                  9.3466 %
Root relative squared error             35.6559 %
Total Number of Instances               45

=== Detailed Accuracy By Class ===


                 TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                 1         0         1           1        1           1
Iris-setosa
                 1         0.069     0.889       1        0.941
0.966    Iris-versicolor
                 0.867     0         1           0.867    0.929
0.964    Iris-virginica
```

```
Weighted Avg.     0.956      0.025      0.96      0.956      0.955
0.976


=== Confusion Matrix ===

  a  b  c   <-- classified as
 14  0  0 |  a = Iris-setosa
  0 16  0 |  b = Iris-versicolor
  0  2 13 |  c = Iris-virginica
```

```
========================================================================
Data Set : iris.arff
Classifier : CustomID3
========================================================================
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 5
      at
com.company.CustomID3.distributionForInstance(CustomID3.java:378)
      at
com.company.CustomID3.distributionForInstance(CustomID3.java:379)
      at
weka.classifiers.Evaluation.evaluateModelOnceAndRecordPrediction(Evaluati
on.java:1512)
      at weka.classifiers.Evaluation.evaluateModel(Evaluation.java:1480)
      at com.company.WekaJava.testModel(WekaJava.java:69)
      at com.company.Main.main(Main.java:20)
      at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
      at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java
:62)
      at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorI
mpl.java:43)
      at java.lang.reflect.Method.invoke(Method.java:497)
      at
com.intellij.rt.execution.application.AppMain.main(AppMain.java:140)
========================================================================
Data Set : iris.arff
Classifier : CustomC45
========================================================================
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 3
      at
com.company.CustomC45.distributionForInstance(CustomC45.java:394)
      at
weka.classifiers.Evaluation.evaluateModelOnceAndRecordPrediction(Evaluati
on.java:1512)
      at weka.classifiers.Evaluation.evaluateModel(Evaluation.java:1480)
      at com.company.WekaJava.testModel(WekaJava.java:69)
      at com.company.Main.main(Main.java:20)
      at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
      at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java
:62)
      at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorI
mpl.java:43)
      at java.lang.reflect.Method.invoke(Method.java:497)
      at
com.intellij.rt.execution.application.AppMain.main(AppMain.java:140)
========================================================================
Data Set : weather.nominal.arff
Classifier : ID3 Weka
========================================================================
```

```
=== Test Evaluation ===

Correctly Classified Instances        14              100      %
Incorrectly Classified Instances       0                0      %
Kappa statistic                        1
Mean absolute error                    0
Root mean squared error                0
Relative absolute error                0        %
Root relative squared error            0        %
Total Number of Instances             14

=== Detailed Accuracy By Class ===

                TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                  1         0           1         1          1          1
yes
                  1         0           1         1          1          1
no
Weighted Avg.     1         0           1         1          1          1

=== Confusion Matrix ===

 a b   <-- classified as
 9 0 | a = yes
 0 5 | b = no

=== 10-fold cross validation ===

Correctly Classified Instances        12             85.7143 %
Incorrectly Classified Instances       2             14.2857 %
Kappa statistic                        0.6889
Mean absolute error                    0.1429
Root mean squared error                0.378
Relative absolute error               30        %
Root relative squared error           76.6097 %
Total Number of Instances             14

=== Detailed Accuracy By Class ===

                TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                 0.889     0.2         0.889     0.889      0.889
0.844     yes
                 0.8       0.111       0.8       0.8        0.8
0.844     no
Weighted Avg.    0.857     0.168       0.857     0.857      0.857
0.844

=== Confusion Matrix ===

 a b   <-- classified as
 8 1 | a = yes
 1 4 | b = no

=== percentage split 70.0% ===

Correctly Classified Instances         2               50      %
Incorrectly Classified Instances       2               50      %
Kappa statistic                        0
Mean absolute error                    0.5
```

```
Root mean squared error                 0.7071
Relative absolute error                 100       %
Root relative squared error             134.1641 %
Total Number of Instances               4

=== Detailed Accuracy By Class ===

              TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                1         1         0.5         1        0.667       0.5
yes
                0         0         0           0        0           0.5
no
Weighted Avg.   0.5       0.5       0.25        0.5      0.333       0.5

=== Confusion Matrix ===

 a b   <-- classified as
 2 0 | a = yes
 2 0 | b = no
```

```
=====================================================================
Data Set : weather.nominal.arff
Classifier : J48 Weka
=====================================================================
=== Test Evaluation ===

Correctly Classified Instances          14                100       %
Incorrectly Classified Instances        0                 0         %
Kappa statistic                         1
Mean absolute error                     0
Root mean squared error                 0
Relative absolute error                 0         %
Root relative squared error             0         %
Total Number of Instances               14

=== Detailed Accuracy By Class ===

              TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                1         0         1           1        1           1
yes
                1         0         1           1        1           1
no
Weighted Avg.   1         0         1           1        1           1

=== Confusion Matrix ===

 a b   <-- classified as
 9 0 | a = yes
 0 5 | b = no

=== 10-fold cross validation ===

Correctly Classified Instances          7                 50        %
Incorrectly Classified Instances        7                 50        %
Kappa statistic                         -0.0426
Mean absolute error                     0.4167
Root mean squared error                 0.5984
Relative absolute error                 87.5      %
Root relative squared error             121.2987 %
Total Number of Instances               14
```

```
=== Detailed Accuracy By Class ===

                TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                0.556     0.6       0.625       0.556    0.588
0.633     yes
                0.4       0.444     0.333       0.4      0.364
0.633     no
Weighted Avg.   0.5       0.544     0.521       0.5      0.508
0.633

=== Confusion Matrix ===

 a b   <-- classified as
 5 4 | a = yes
 3 2 | b = no

=== percentage split 70.0% ===

Correctly Classified Instances          1                 25      %
Incorrectly Classified Instances        3                 75      %
Kappa statistic                        -0.5
Mean absolute error                     0.75
Root mean squared error                 0.866
Relative absolute error               150         %
Root relative squared error           164.3168 %
Total Number of Instances               4

=== Detailed Accuracy By Class ===

                TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                0.5       1         0.333       0.5      0.4         0.25
yes
                0         0.5       0           0        0           0.25
no
Weighted Avg.   0.25      0.75      0.167       0.25     0.2         0.25

=== Confusion Matrix ===

 a b   <-- classified as
 1 1 | a = yes
 2 0 | b = no
=======================================================================
Data Set : weather.nominal.arff
Classifier : CustomID3
=======================================================================
=== Test Evaluation ===

Correctly Classified Instances         14                 100     %
Incorrectly Classified Instances        0                  0      %
Kappa statistic                         1
Mean absolute error                     0
Root mean squared error                 0
Relative absolute error                 0         %
Root relative squared error             0         %
Total Number of Instances              14

=== Detailed Accuracy By Class ===
```

	TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
	1	0	1	1	1	1	yes
	1	0	1	1	1	1	no
Weighted Avg.	1	0	1	1	1	1	

=== Confusion Matrix ===

```
 a b   <-- classified as
 9 0 | a = yes
 0 5 | b = no
```

=== 10-fold cross validation ===

```
Correctly Classified Instances          12               85.7143 %
Incorrectly Classified Instances         2               14.2857 %
Kappa statistic                          0.6889
Mean absolute error                      0.1429
Root mean squared error                  0.378
Relative absolute error                 30      %
Root relative squared error             76.6097 %
Total Number of Instances               14
```

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
	0.889	0.2	0.889	0.889	0.889	0.844	yes
	0.8	0.111	0.8	0.8	0.8	0.844	no
Weighted Avg.	0.857	0.168	0.857	0.857	0.857	0.844	

=== Confusion Matrix ===

```
 a b   <-- classified as
 8 1 | a = yes
 1 4 | b = no
```

=== percentage split 70.0% ===

```
Correctly Classified Instances           2               50      %
Incorrectly Classified Instances         2               50      %
Kappa statistic                          0
Mean absolute error                      0.5
Root mean squared error                  0.7071
Relative absolute error                100      %
Root relative squared error            134.1641 %
Total Number of Instances                4
```

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
	1	1	0.5	1	0.667	0.5	yes
	0	0	0	0	0	0.5	no

```
Weighted Avg.    0.5        0.5        0.25       0.5        0.333        0.5

=== Confusion Matrix ===

 a b   <-- classified as
 2 0 | a = yes
 2 0 | b = no
```

```
========================================================================
Data Set : weather.nominal.arff
Classifier : CustomC45
========================================================================
=== Test Evaluation ===

Correctly Classified Instances          14                100        %
Incorrectly Classified Instances         0                  0        %
Kappa statistic                          1
Mean absolute error                      0
Root mean squared error                  0
Relative absolute error                  0        %
Root relative squared error              0        %
Total Number of Instances               14

=== Detailed Accuracy By Class ===

              TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                1         0          1          1          1          1
yes
                1         0          1          1          1          1
no
Weighted Avg.   1         0          1          1          1          1

=== Confusion Matrix ===

 a b   <-- classified as
 9 0 | a = yes
 0 5 | b = no

=== 10-fold cross validation ===

Correctly Classified Instances          11                78.5714 %
Incorrectly Classified Instances         3                21.4286 %
Kappa statistic                          0.5532
Mean absolute error                      0.2143
Root mean squared error                  0.4629
Relative absolute error                 45        %
Root relative squared error             93.8273 %
Total Number of Instances               14

=== Detailed Accuracy By Class ===

              TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area   Class
                0.778     0.2        0.875      0.778      0.824
0.789     yes
                0.8       0.222      0.667      0.8        0.727
0.789     no
Weighted Avg.   0.786     0.208      0.801      0.786      0.789
0.789

=== Confusion Matrix ===
```

```
 a b   <-- classified as
 7 2 | a = yes
 1 4 | b = no


=== percentage split 70.0% ===

Correctly Classified Instances         1              25      %
Incorrectly Classified Instances       3              75      %
Kappa statistic                       -0.5
Mean absolute error                    0.75
Root mean squared error                0.866
Relative absolute error              150        %
Root relative squared error          164.3168 %
Total Number of Instances              4


=== Detailed Accuracy By Class ===

             TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area  Class
               0.5       1         0.333      0.5       0.4        0.25
yes
               0         0.5       0          0         0          0.25
no
Weighted Avg.  0.25      0.75      0.167      0.25      0.2        0.25


=== Confusion Matrix ===

 a b   <-- classified as
 1 1 | a = yes
 2 0 | b = no
```

```
======================================================================
Data Set : weather.numeric.arff
Classifier : ID3 Weka
======================================================================
Exception in thread "main" weka.core.UnsupportedAttributeTypeException:
weka.classifiers.trees.Id3: Cannot handle numeric attributes!
      at weka.core.Capabilities.test(Capabilities.java:954)
      at weka.core.Capabilities.test(Capabilities.java:869)
      at weka.core.Capabilities.test(Capabilities.java:1085)
      at weka.core.Capabilities.test(Capabilities.java:1023)
      at weka.core.Capabilities.testWithFail(Capabilities.java:1302)
      at weka.classifiers.trees.Id3.buildClassifier(Id3.java:166)
      at com.company.WekaJava.buildClassifier(WekaJava.java:130)
      at com.company.Main.main(Main.java:18)
      at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
      at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java
:62)
      at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorI
mpl.java:43)
      at java.lang.reflect.Method.invoke(Method.java:497)
      at
com.intellij.rt.execution.application.AppMain.main(AppMain.java:140)
======================================================================
Data Set : weather.numeric.arff
Classifier : J48 Weka
======================================================================
=== Test Evaluation ===
```

```
Correctly Classified Instances        14              100      %
Incorrectly Classified Instances       0                0      %
Kappa statistic                        1
Mean absolute error                    0
Root mean squared error                0
Relative absolute error                0       %
Root relative squared error            0       %
Total Number of Instances             14
```

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
	1	0	1	1	1	1	yes
	1	0	1	1	1	1	no
Weighted Avg.	1	0	1	1	1	1	

=== Confusion Matrix ===

```
 a b   <-- classified as
 9 0 | a = yes
 0 5 | b = no
```

=== 10-fold cross validation ===

```
Correctly Classified Instances        9              64.2857 %
Incorrectly Classified Instances       5              35.7143 %
Kappa statistic                        0.186
Mean absolute error                    0.2857
Root mean squared error                0.4818
Relative absolute error               60       %
Root relative squared error           97.6586 %
Total Number of Instances             14
```

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	ROC Area	Class
	0.778	0.6	0.7	0.778	0.737	0.789	yes
	0.4	0.222	0.5	0.4	0.444	0.789	no
Weighted Avg.	0.643	0.465	0.629	0.643	0.632	0.789	

=== Confusion Matrix ===

```
 a b   <-- classified as
 7 2 | a = yes
 3 2 | b = no
```

=== percentage split 70.0% ===

```
Correctly Classified Instances        1               25      %
Incorrectly Classified Instances       3               75      %
Kappa statistic                       -0.5
Mean absolute error                    0.75
Root mean squared error                0.866
Relative absolute error              150       %
```

```
Root relative squared error              164.3168 %
Total Number of Instances                   4


=== Detailed Accuracy By Class ===

              TP Rate   FP Rate   Precision   Recall   F-Measure   ROC
Area  Class
                0.5       1         0.333       0.5        0.4        0.25
yes
                0        0.5        0           0          0          0.25
no
Weighted Avg.   0.25     0.75       0.167       0.25       0.2        0.25


=== Confusion Matrix ===

 a b   <-- classified as
 1 1 | a = yes
 2 0 | b = no
```

```
=======================================================================
Data Set : weather.numeric.arff
Classifier : CustomID3
=======================================================================
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 85
      at
com.company.CustomID3.distributionForInstance(CustomID3.java:378)
      at
com.company.CustomID3.distributionForInstance(CustomID3.java:379)
      at
weka.classifiers.Evaluation.evaluateModelOnceAndRecordPrediction(Evaluati
on.java:1512)
      at weka.classifiers.Evaluation.evaluateModel(Evaluation.java:1480)
      at com.company.WekaJava.testModel(WekaJava.java:69)
      at com.company.Main.main(Main.java:20)
      at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
      at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java
:62)
      at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorI
mpl.java:43)
      at java.lang.reflect.Method.invoke(Method.java:497)
      at
com.intellij.rt.execution.application.AppMain.main(AppMain.java:140)
```

```
=======================================================================
Data Set : weather.numeric.arff
Classifier : CustomC45
=======================================================================
Exception in thread "main" java.lang.ArrayIndexOutOfBoundsException: 85
      at
com.company.CustomC45.distributionForInstance(CustomC45.java:394)
      at
weka.classifiers.Evaluation.evaluateModelOnceAndRecordPrediction(Evaluati
on.java:1512)
      at weka.classifiers.Evaluation.evaluateModel(Evaluation.java:1480)
      at com.company.WekaJava.testModel(WekaJava.java:69)
      at com.company.Main.main(Main.java:20)
      at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
      at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java
:62)
```

```
        at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorI
mpl.java:43)
        at java.lang.reflect.Method.invoke(Method.java:497)
        at
com.intellij.rt.execution.application.AppMain.main(AppMain.java:140)
```