**LAPORAN TUGAS KECIL 2**

**IF3170 INTELIGENSI BUATAN**

**EKSPLORASI WEKA**

Oleh:

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PROGRAM STUDI TEKNIK INFORMATIKA  
SEKOLAH TEKNIK ELEKTRO DANA INFORMATIKA

INSTITUT TEKNOLOGI BANDUNG

2016

1. Data Uji dan Hasil Pengujian

Dataset yang digunakan adalah iris.arff sebagai berikut.

@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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5.6,2.7,4.2,1.3,Iris-versicolor

5.7,3.0,4.2,1.2,Iris-versicolor

5.7,2.9,4.2,1.3,Iris-versicolor

6.2,2.9,4.3,1.3,Iris-versicolor

5.1,2.5,3.0,1.1,Iris-versicolor

5.7,2.8,4.1,1.3,Iris-versicolor

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7.6,3.0,6.6,2.1,Iris-virginica

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6.8,3.0,5.5,2.1,Iris-virginica

5.7,2.5,5.0,2.0,Iris-virginica

5.8,2.8,5.1,2.4,Iris-virginica

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7.9,3.8,6.4,2.0,Iris-virginica

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6.1,2.6,5.6,1.4,Iris-virginica

7.7,3.0,6.1,2.3,Iris-virginica

6.3,3.4,5.6,2.4,Iris-virginica

6.4,3.1,5.5,1.8,Iris-virginica

6.0,3.0,4.8,1.8,Iris-virginica

6.9,3.1,5.4,2.1,Iris-virginica

6.7,3.1,5.6,2.4,Iris-virginica

6.9,3.1,5.1,2.3,Iris-virginica

5.8,2.7,5.1,1.9,Iris-virginica

6.8,3.2,5.9,2.3,Iris-virginica

6.7,3.3,5.7,2.5,Iris-virginica

6.7,3.0,5.2,2.3,Iris-virginica

6.3,2.5,5.0,1.9,Iris-virginica

6.5,3.0,5.2,2.0,Iris-virginica

6.2,3.4,5.4,2.3,Iris-virginica

5.9,3.0,5.1,1.8,Iris-virginica

Implementasi program dalam Java menggunakan kelas dengan nama Tucil2AI. Pada kelas ini, terdapat beberapa method, yaitu:

1. public Tucil2AI() sebagai konstruktor.
2. public void readDataSet(String filename) untuk membaca dataset dengan nama file filename.
3. public void useFilterNtoN() untuk melakukan filter Numeric to Nominal.
4. public void useFilterDiscretize() untuk melakukan filter Discretize.
5. public void train10Fold(Classifier clsf, int folds) untuk melakukan Cross Validation Split dengan folds sejumlah folds.
6. public void trainFull(Classifier clsf) untuk melakukan full training.
7. public void saveModel(String filename) untuk menyimpan model dengan nama filename.
8. public void loadModel(String filename) untuk memuat model dari file dengan nama filename.
9. public void createInstance() untuk menerima instan baru dari pengguna.

**Hasil Pengujian**

1. Membaca dataset

Dataset terbaca dengan baik. Pembacaan dataset adalah hal paling pertama yang dilakukan sebelum melakukan operasi-operasi selanjutnya.

Dataset loaded.

1. Melakukan filer Discritize

Berikut ini adalah hasil filter Discritize oleh kelas Java.

@relation iris-weka.filters.unsupervised.attribute.Discretize-B10-M-1.0-R1-2

@attribute sepallength {'\'(-inf-4.66]\'','\'(4.66-5.02]\'','\'(5.02-5.38]\'','\'(5.38-5.74]\'','\'(5.74-6.1]\'','\'(6.1-6.46]\'','\'(6.46-6.82]\'','\'(6.82-7.18]\'','\'(7.18-7.54]\'','\'(7.54-inf)\''}

@attribute sepalwidth {'\'(-inf-2.24]\'','\'(2.24-2.48]\'','\'(2.48-2.72]\'','\'(2.72-2.96]\'','\'(2.96-3.2]\'','\'(3.2-3.44]\'','\'(3.44-3.68]\'','\'(3.68-3.92]\'','\'(3.92-4.16]\'','\'(4.16-inf)\''}

@attribute petallength numeric

@attribute petalwidth numeric

@attribute class {Iris-setosa,Iris-versicolor,Iris-virginica}

@data

'\'(5.02-5.38]\'','\'(3.44-3.68]\'',1.4,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.4,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.3,0.2,Iris-setosa

'\'(-inf-4.66]\'','\'(2.96-3.2]\'',1.5,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(3.44-3.68]\'',1.4,0.2,Iris-setosa

'\'(5.38-5.74]\'','\'(3.68-3.92]\'',1.7,0.4,Iris-setosa

'\'(-inf-4.66]\'','\'(3.2-3.44]\'',1.4,0.3,Iris-setosa

'\'(4.66-5.02]\'','\'(3.2-3.44]\'',1.5,0.2,Iris-setosa

'\'(-inf-4.66]\'','\'(2.72-2.96]\'',1.4,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.5,0.1,Iris-setosa

'\'(5.38-5.74]\'','\'(3.68-3.92]\'',1.5,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(3.2-3.44]\'',1.6,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.4,0.1,Iris-setosa

'\'(-inf-4.66]\'','\'(2.96-3.2]\'',1.1,0.1,Iris-setosa

'\'(5.74-6.1]\'','\'(3.92-4.16]\'',1.2,0.2,Iris-setosa

'\'(5.38-5.74]\'','\'(4.16-inf)\'',1.5,0.4,Iris-setosa

'\'(5.38-5.74]\'','\'(3.68-3.92]\'',1.3,0.4,Iris-setosa

'\'(5.02-5.38]\'','\'(3.44-3.68]\'',1.4,0.3,Iris-setosa

'\'(5.38-5.74]\'','\'(3.68-3.92]\'',1.7,0.3,Iris-setosa

'\'(5.02-5.38]\'','\'(3.68-3.92]\'',1.5,0.3,Iris-setosa

'\'(5.38-5.74]\'','\'(3.2-3.44]\'',1.7,0.2,Iris-setosa

'\'(5.02-5.38]\'','\'(3.68-3.92]\'',1.5,0.4,Iris-setosa

'\'(-inf-4.66]\'','\'(3.44-3.68]\'',1,0.2,Iris-setosa

'\'(5.02-5.38]\'','\'(3.2-3.44]\'',1.7,0.5,Iris-setosa

'\'(4.66-5.02]\'','\'(3.2-3.44]\'',1.9,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.6,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(3.2-3.44]\'',1.6,0.4,Iris-setosa

'\'(5.02-5.38]\'','\'(3.44-3.68]\'',1.5,0.2,Iris-setosa

'\'(5.02-5.38]\'','\'(3.2-3.44]\'',1.4,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.6,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.6,0.2,Iris-setosa

'\'(5.38-5.74]\'','\'(3.2-3.44]\'',1.5,0.4,Iris-setosa

'\'(5.02-5.38]\'','\'(3.92-4.16]\'',1.5,0.1,Iris-setosa

'\'(5.38-5.74]\'','\'(4.16-inf)\'',1.4,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.5,0.1,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.2,0.2,Iris-setosa

'\'(5.38-5.74]\'','\'(3.44-3.68]\'',1.3,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.5,0.1,Iris-setosa

'\'(-inf-4.66]\'','\'(2.96-3.2]\'',1.3,0.2,Iris-setosa

'\'(5.02-5.38]\'','\'(3.2-3.44]\'',1.5,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(3.44-3.68]\'',1.3,0.3,Iris-setosa

'\'(-inf-4.66]\'','\'(2.24-2.48]\'',1.3,0.3,Iris-setosa

'\'(-inf-4.66]\'','\'(2.96-3.2]\'',1.3,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(3.44-3.68]\'',1.6,0.6,Iris-setosa

'\'(5.02-5.38]\'','\'(3.68-3.92]\'',1.9,0.4,Iris-setosa

'\'(4.66-5.02]\'','\'(2.96-3.2]\'',1.4,0.3,Iris-setosa

'\'(5.02-5.38]\'','\'(3.68-3.92]\'',1.6,0.2,Iris-setosa

'\'(-inf-4.66]\'','\'(2.96-3.2]\'',1.4,0.2,Iris-setosa

'\'(5.02-5.38]\'','\'(3.68-3.92]\'',1.5,0.2,Iris-setosa

'\'(4.66-5.02]\'','\'(3.2-3.44]\'',1.4,0.2,Iris-setosa

'\'(6.82-7.18]\'','\'(2.96-3.2]\'',4.7,1.4,Iris-versicolor

'\'(6.1-6.46]\'','\'(2.96-3.2]\'',4.5,1.5,Iris-versicolor

'\'(6.82-7.18]\'','\'(2.96-3.2]\'',4.9,1.5,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.24-2.48]\'',4,1.3,Iris-versicolor

'\'(6.46-6.82]\'','\'(2.72-2.96]\'',4.6,1.5,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.72-2.96]\'',4.5,1.3,Iris-versicolor

'\'(6.1-6.46]\'','\'(3.2-3.44]\'',4.7,1.6,Iris-versicolor

'\'(4.66-5.02]\'','\'(2.24-2.48]\'',3.3,1,Iris-versicolor

'\'(6.46-6.82]\'','\'(2.72-2.96]\'',4.6,1.3,Iris-versicolor

'\'(5.02-5.38]\'','\'(2.48-2.72]\'',3.9,1.4,Iris-versicolor

'\'(4.66-5.02]\'','\'(-inf-2.24]\'',3.5,1,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.96-3.2]\'',4.2,1.5,Iris-versicolor

'\'(5.74-6.1]\'','\'(-inf-2.24]\'',4,1,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.72-2.96]\'',4.7,1.4,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.72-2.96]\'',3.6,1.3,Iris-versicolor

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',4.4,1.4,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.96-3.2]\'',4.5,1.5,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.48-2.72]\'',4.1,1,Iris-versicolor

'\'(6.1-6.46]\'','\'(-inf-2.24]\'',4.5,1.5,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.48-2.72]\'',3.9,1.1,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.96-3.2]\'',4.8,1.8,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.72-2.96]\'',4,1.3,Iris-versicolor

'\'(6.1-6.46]\'','\'(2.48-2.72]\'',4.9,1.5,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.72-2.96]\'',4.7,1.2,Iris-versicolor

'\'(6.1-6.46]\'','\'(2.72-2.96]\'',4.3,1.3,Iris-versicolor

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',4.4,1.4,Iris-versicolor

'\'(6.46-6.82]\'','\'(2.72-2.96]\'',4.8,1.4,Iris-versicolor

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5,1.7,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.72-2.96]\'',4.5,1.5,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.48-2.72]\'',3.5,1,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.24-2.48]\'',3.8,1.1,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.24-2.48]\'',3.7,1,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.48-2.72]\'',3.9,1.2,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.48-2.72]\'',5.1,1.6,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.96-3.2]\'',4.5,1.5,Iris-versicolor

'\'(5.74-6.1]\'','\'(3.2-3.44]\'',4.5,1.6,Iris-versicolor

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',4.7,1.5,Iris-versicolor

'\'(6.1-6.46]\'','\'(2.24-2.48]\'',4.4,1.3,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.96-3.2]\'',4.1,1.3,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.48-2.72]\'',4,1.3,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.48-2.72]\'',4.4,1.2,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.96-3.2]\'',4.6,1.4,Iris-versicolor

'\'(5.74-6.1]\'','\'(2.48-2.72]\'',4,1.2,Iris-versicolor

'\'(4.66-5.02]\'','\'(2.24-2.48]\'',3.3,1,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.48-2.72]\'',4.2,1.3,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.96-3.2]\'',4.2,1.2,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.72-2.96]\'',4.2,1.3,Iris-versicolor

'\'(6.1-6.46]\'','\'(2.72-2.96]\'',4.3,1.3,Iris-versicolor

'\'(5.02-5.38]\'','\'(2.48-2.72]\'',3,1.1,Iris-versicolor

'\'(5.38-5.74]\'','\'(2.72-2.96]\'',4.1,1.3,Iris-versicolor

'\'(6.1-6.46]\'','\'(3.2-3.44]\'',6,2.5,Iris-virginica

'\'(5.74-6.1]\'','\'(2.48-2.72]\'',5.1,1.9,Iris-virginica

'\'(6.82-7.18]\'','\'(2.96-3.2]\'',5.9,2.1,Iris-virginica

'\'(6.1-6.46]\'','\'(2.72-2.96]\'',5.6,1.8,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.8,2.2,Iris-virginica

'\'(7.54-inf)\'','\'(2.96-3.2]\'',6.6,2.1,Iris-virginica

'\'(4.66-5.02]\'','\'(2.48-2.72]\'',4.5,1.7,Iris-virginica

'\'(7.18-7.54]\'','\'(2.72-2.96]\'',6.3,1.8,Iris-virginica

'\'(6.46-6.82]\'','\'(2.48-2.72]\'',5.8,1.8,Iris-virginica

'\'(7.18-7.54]\'','\'(3.44-3.68]\'',6.1,2.5,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.1,2,Iris-virginica

'\'(6.1-6.46]\'','\'(2.48-2.72]\'',5.3,1.9,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.5,2.1,Iris-virginica

'\'(5.38-5.74]\'','\'(2.48-2.72]\'',5,2,Iris-virginica

'\'(5.74-6.1]\'','\'(2.72-2.96]\'',5.1,2.4,Iris-virginica

'\'(6.1-6.46]\'','\'(2.96-3.2]\'',5.3,2.3,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.5,1.8,Iris-virginica

'\'(7.54-inf)\'','\'(3.68-3.92]\'',6.7,2.2,Iris-virginica

'\'(7.54-inf)\'','\'(2.48-2.72]\'',6.9,2.3,Iris-virginica

'\'(5.74-6.1]\'','\'(-inf-2.24]\'',5,1.5,Iris-virginica

'\'(6.82-7.18]\'','\'(2.96-3.2]\'',5.7,2.3,Iris-virginica

'\'(5.38-5.74]\'','\'(2.72-2.96]\'',4.9,2,Iris-virginica

'\'(7.54-inf)\'','\'(2.72-2.96]\'',6.7,2,Iris-virginica

'\'(6.1-6.46]\'','\'(2.48-2.72]\'',4.9,1.8,Iris-virginica

'\'(6.46-6.82]\'','\'(3.2-3.44]\'',5.7,2.1,Iris-virginica

'\'(7.18-7.54]\'','\'(2.96-3.2]\'',6,1.8,Iris-virginica

'\'(6.1-6.46]\'','\'(2.72-2.96]\'',4.8,1.8,Iris-virginica

'\'(5.74-6.1]\'','\'(2.96-3.2]\'',4.9,1.8,Iris-virginica

'\'(6.1-6.46]\'','\'(2.72-2.96]\'',5.6,2.1,Iris-virginica

'\'(7.18-7.54]\'','\'(2.96-3.2]\'',5.8,1.6,Iris-virginica

'\'(7.18-7.54]\'','\'(2.72-2.96]\'',6.1,1.9,Iris-virginica

'\'(7.54-inf)\'','\'(3.68-3.92]\'',6.4,2,Iris-virginica

'\'(6.1-6.46]\'','\'(2.72-2.96]\'',5.6,2.2,Iris-virginica

'\'(6.1-6.46]\'','\'(2.72-2.96]\'',5.1,1.5,Iris-virginica

'\'(5.74-6.1]\'','\'(2.48-2.72]\'',5.6,1.4,Iris-virginica

'\'(7.54-inf)\'','\'(2.96-3.2]\'',6.1,2.3,Iris-virginica

'\'(6.1-6.46]\'','\'(3.2-3.44]\'',5.6,2.4,Iris-virginica

'\'(6.1-6.46]\'','\'(2.96-3.2]\'',5.5,1.8,Iris-virginica

'\'(5.74-6.1]\'','\'(2.96-3.2]\'',4.8,1.8,Iris-virginica

'\'(6.82-7.18]\'','\'(2.96-3.2]\'',5.4,2.1,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.6,2.4,Iris-virginica

'\'(6.82-7.18]\'','\'(2.96-3.2]\'',5.1,2.3,Iris-virginica

'\'(5.74-6.1]\'','\'(2.48-2.72]\'',5.1,1.9,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.9,2.3,Iris-virginica

'\'(6.46-6.82]\'','\'(3.2-3.44]\'',5.7,2.5,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.2,2.3,Iris-virginica

'\'(6.1-6.46]\'','\'(2.48-2.72]\'',5,1.9,Iris-virginica

'\'(6.46-6.82]\'','\'(2.96-3.2]\'',5.2,2,Iris-virginica

'\'(6.1-6.46]\'','\'(3.2-3.44]\'',5.4,2.3,Iris-virginica

'\'(5.74-6.1]\'','\'(2.96-3.2]\'',5.1,1.8,Iris-virginica

Hasilnya sama dengan hasil filter Discretize menggunakan GUI.

No. sepallength sepalwidth petallength petalwidth class

1 '(5.02-5.38]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

2 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

3 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

4 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

5 '(4.66-5.02]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

6 '(5.38-5.74]' '(3.68-3.92]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

7 '(-inf-4.66]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

8 '(4.66-5.02]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

9 '(-inf-4.66]' '(2.72-2.96]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

10 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

11 '(5.38-5.74]' '(3.68-3.92]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

12 '(4.66-5.02]' '(3.2-3.44]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

13 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

14 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

15 '(5.74-6.1]' '(3.92-4.16]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

16 '(5.38-5.74]' '(4.16-inf)' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

17 '(5.38-5.74]' '(3.68-3.92]' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

18 '(5.02-5.38]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

19 '(5.38-5.74]' '(3.68-3.92]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

20 '(5.02-5.38]' '(3.68-3.92]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

21 '(5.38-5.74]' '(3.2-3.44]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

22 '(5.02-5.38]' '(3.68-3.92]' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

23 '(-inf-4.66]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

24 '(5.02-5.38]' '(3.2-3.44]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

25 '(4.66-5.02]' '(3.2-3.44]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

26 '(4.66-5.02]' '(2.96-3.2]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

27 '(4.66-5.02]' '(3.2-3.44]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

28 '(5.02-5.38]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

29 '(5.02-5.38]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

30 '(4.66-5.02]' '(2.96-3.2]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

31 '(4.66-5.02]' '(2.96-3.2]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

32 '(5.38-5.74]' '(3.2-3.44]' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

33 '(5.02-5.38]' '(3.92-4.16]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

34 '(5.38-5.74]' '(4.16-inf)' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

35 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

36 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

37 '(5.38-5.74]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

38 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

39 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

40 '(5.02-5.38]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

41 '(4.66-5.02]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

42 '(-inf-4.66]' '(2.24-2.48]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

43 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

44 '(4.66-5.02]' '(3.44-3.68]' '(1.59-2.18]' '(0.58-0.82]' Iris-setosa

45 '(5.02-5.38]' '(3.68-3.92]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

46 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

47 '(5.02-5.38]' '(3.68-3.92]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

48 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

49 '(5.02-5.38]' '(3.68-3.92]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

50 '(4.66-5.02]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

51 '(6.82-7.18]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

52 '(6.1-6.46]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

53 '(6.82-7.18]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

54 '(5.38-5.74]' '(2.24-2.48]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

55 '(6.46-6.82]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

56 '(5.38-5.74]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

57 '(6.1-6.46]' '(3.2-3.44]' '(4.54-5.13]' '(1.54-1.78]' Iris-versicolor

58 '(4.66-5.02]' '(2.24-2.48]' '(2.77-3.36]' '(0.82-1.06]' Iris-versicolor

59 '(6.46-6.82]' '(2.72-2.96]' '(4.54-5.13]' '(1.06-1.3]' Iris-versicolor

60 '(5.02-5.38]' '(2.48-2.72]' '(3.36-3.95]' '(1.3-1.54]' Iris-versicolor

61 '(4.66-5.02]' '(-inf-2.24]' '(3.36-3.95]' '(0.82-1.06]' Iris-versicolor

62 '(5.74-6.1]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

63 '(5.74-6.1]' '(-inf-2.24]' '(3.95-4.54]' '(0.82-1.06]' Iris-versicolor

64 '(5.74-6.1]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

65 '(5.38-5.74]' '(2.72-2.96]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

66 '(6.46-6.82]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

67 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

68 '(5.74-6.1]' '(2.48-2.72]' '(3.95-4.54]' '(0.82-1.06]' Iris-versicolor

69 '(6.1-6.46]' '(-inf-2.24]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

70 '(5.38-5.74]' '(2.48-2.72]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

71 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-versicolor

72 '(5.74-6.1]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

73 '(6.1-6.46]' '(2.48-2.72]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

74 '(5.74-6.1]' '(2.72-2.96]' '(4.54-5.13]' '(1.06-1.3]' Iris-versicolor

75 '(6.1-6.46]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

76 '(6.46-6.82]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

77 '(6.46-6.82]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

78 '(6.46-6.82]' '(2.96-3.2]' '(4.54-5.13]' '(1.54-1.78]' Iris-versicolor

79 '(5.74-6.1]' '(2.72-2.96]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

80 '(5.38-5.74]' '(2.48-2.72]' '(3.36-3.95]' '(0.82-1.06]' Iris-versicolor

81 '(5.38-5.74]' '(2.24-2.48]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

82 '(5.38-5.74]' '(2.24-2.48]' '(3.36-3.95]' '(0.82-1.06]' Iris-versicolor

83 '(5.74-6.1]' '(2.48-2.72]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

84 '(5.74-6.1]' '(2.48-2.72]' '(4.54-5.13]' '(1.54-1.78]' Iris-versicolor

85 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

86 '(5.74-6.1]' '(3.2-3.44]' '(3.95-4.54]' '(1.54-1.78]' Iris-versicolor

87 '(6.46-6.82]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

88 '(6.1-6.46]' '(2.24-2.48]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

89 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

90 '(5.38-5.74]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

91 '(5.38-5.74]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

92 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

93 '(5.74-6.1]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

94 '(4.66-5.02]' '(2.24-2.48]' '(2.77-3.36]' '(0.82-1.06]' Iris-versicolor

95 '(5.38-5.74]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

96 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

97 '(5.38-5.74]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

98 '(6.1-6.46]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

99 '(5.02-5.38]' '(2.48-2.72]' '(2.77-3.36]' '(1.06-1.3]' Iris-versicolor

100 '(5.38-5.74]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

101 '(6.1-6.46]' '(3.2-3.44]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

102 '(5.74-6.1]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

103 '(6.82-7.18]' '(2.96-3.2]' '(5.72-6.31]' '(2.02-2.26]' Iris-virginica

104 '(6.1-6.46]' '(2.72-2.96]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

105 '(6.46-6.82]' '(2.96-3.2]' '(5.72-6.31]' '(2.02-2.26]' Iris-virginica

106 '(7.54-inf)' '(2.96-3.2]' '(6.31-inf)' '(2.02-2.26]' Iris-virginica

107 '(4.66-5.02]' '(2.48-2.72]' '(3.95-4.54]' '(1.54-1.78]' Iris-virginica

108 '(7.18-7.54]' '(2.72-2.96]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

109 '(6.46-6.82]' '(2.48-2.72]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

110 '(7.18-7.54]' '(3.44-3.68]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

111 '(6.46-6.82]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

112 '(6.1-6.46]' '(2.48-2.72]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

113 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

114 '(5.38-5.74]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

115 '(5.74-6.1]' '(2.72-2.96]' '(4.54-5.13]' '(2.26-inf)' Iris-virginica

116 '(6.1-6.46]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

117 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

118 '(7.54-inf)' '(3.68-3.92]' '(6.31-inf)' '(2.02-2.26]' Iris-virginica

119 '(7.54-inf)' '(2.48-2.72]' '(6.31-inf)' '(2.26-inf)' Iris-virginica

120 '(5.74-6.1]' '(-inf-2.24]' '(4.54-5.13]' '(1.3-1.54]' Iris-virginica

121 '(6.82-7.18]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

122 '(5.38-5.74]' '(2.72-2.96]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

123 '(7.54-inf)' '(2.72-2.96]' '(6.31-inf)' '(1.78-2.02]' Iris-virginica

124 '(6.1-6.46]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

125 '(6.46-6.82]' '(3.2-3.44]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

126 '(7.18-7.54]' '(2.96-3.2]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

127 '(6.1-6.46]' '(2.72-2.96]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

128 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

129 '(6.1-6.46]' '(2.72-2.96]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

130 '(7.18-7.54]' '(2.96-3.2]' '(5.72-6.31]' '(1.54-1.78]' Iris-virginica

131 '(7.18-7.54]' '(2.72-2.96]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

132 '(7.54-inf)' '(3.68-3.92]' '(6.31-inf)' '(1.78-2.02]' Iris-virginica

133 '(6.1-6.46]' '(2.72-2.96]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

134 '(6.1-6.46]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-virginica

135 '(5.74-6.1]' '(2.48-2.72]' '(5.13-5.72]' '(1.3-1.54]' Iris-virginica

136 '(7.54-inf)' '(2.96-3.2]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

137 '(6.1-6.46]' '(3.2-3.44]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

138 '(6.1-6.46]' '(2.96-3.2]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

139 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

140 '(6.82-7.18]' '(2.96-3.2]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

141 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

142 '(6.82-7.18]' '(2.96-3.2]' '(4.54-5.13]' '(2.26-inf)' Iris-virginica

143 '(5.74-6.1]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

144 '(6.46-6.82]' '(2.96-3.2]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

145 '(6.46-6.82]' '(3.2-3.44]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

146 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

147 '(6.1-6.46]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

148 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

149 '(6.1-6.46]' '(3.2-3.44]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

150 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

1. Hasil filter Numeric to Nominal

Berikut hasilnya pada kelas Java.

@relation iris-weka.filters.unsupervised.attribute.NumericToNominal-R1-2

@attribute sepallength {4.3,4.4,4.5,4.6,4.7,4.8,4.9,5,5.1,5.2,5.3,5.4,5.5,5.6,5.7,5.8,5.9,6,6.1,6.2,6.3,6.4,6.5,6.6,6.7,6.8,6.9,7,7.1,7.2,7.3,7.4,7.6,7.7,7.9}

@attribute sepalwidth {2,2.2,2.3,2.4,2.5,2.6,2.7,2.8,2.9,3,3.1,3.2,3.3,3.4,3.5,3.6,3.7,3.8,3.9,4,4.1,4.2,4.4}

@attribute petallength numeric

@attribute petalwidth numeric

@attribute class {Iris-setosa,Iris-versicolor,Iris-virginica}

@data

5.1,3.5,1.4,0.2,Iris-setosa

4.9,3,1.4,0.2,Iris-setosa

4.7,3.2,1.3,0.2,Iris-setosa

4.6,3.1,1.5,0.2,Iris-setosa

5,3.6,1.4,0.2,Iris-setosa

5.4,3.9,1.7,0.4,Iris-setosa

4.6,3.4,1.4,0.3,Iris-setosa

5,3.4,1.5,0.2,Iris-setosa

4.4,2.9,1.4,0.2,Iris-setosa

4.9,3.1,1.5,0.1,Iris-setosa

5.4,3.7,1.5,0.2,Iris-setosa

4.8,3.4,1.6,0.2,Iris-setosa

4.8,3,1.4,0.1,Iris-setosa

4.3,3,1.1,0.1,Iris-setosa

5.8,4,1.2,0.2,Iris-setosa

5.7,4.4,1.5,0.4,Iris-setosa

5.4,3.9,1.3,0.4,Iris-setosa

5.1,3.5,1.4,0.3,Iris-setosa

5.7,3.8,1.7,0.3,Iris-setosa

5.1,3.8,1.5,0.3,Iris-setosa

5.4,3.4,1.7,0.2,Iris-setosa

5.1,3.7,1.5,0.4,Iris-setosa

4.6,3.6,1,0.2,Iris-setosa

5.1,3.3,1.7,0.5,Iris-setosa

4.8,3.4,1.9,0.2,Iris-setosa

5,3,1.6,0.2,Iris-setosa

5,3.4,1.6,0.4,Iris-setosa

5.2,3.5,1.5,0.2,Iris-setosa

5.2,3.4,1.4,0.2,Iris-setosa

4.7,3.2,1.6,0.2,Iris-setosa

4.8,3.1,1.6,0.2,Iris-setosa

5.4,3.4,1.5,0.4,Iris-setosa

5.2,4.1,1.5,0.1,Iris-setosa

5.5,4.2,1.4,0.2,Iris-setosa

4.9,3.1,1.5,0.1,Iris-setosa

5,3.2,1.2,0.2,Iris-setosa

5.5,3.5,1.3,0.2,Iris-setosa

4.9,3.1,1.5,0.1,Iris-setosa

4.4,3,1.3,0.2,Iris-setosa

5.1,3.4,1.5,0.2,Iris-setosa

5,3.5,1.3,0.3,Iris-setosa

4.5,2.3,1.3,0.3,Iris-setosa

4.4,3.2,1.3,0.2,Iris-setosa

5,3.5,1.6,0.6,Iris-setosa

5.1,3.8,1.9,0.4,Iris-setosa

4.8,3,1.4,0.3,Iris-setosa

5.1,3.8,1.6,0.2,Iris-setosa

4.6,3.2,1.4,0.2,Iris-setosa

5.3,3.7,1.5,0.2,Iris-setosa

5,3.3,1.4,0.2,Iris-setosa

7,3.2,4.7,1.4,Iris-versicolor

6.4,3.2,4.5,1.5,Iris-versicolor

6.9,3.1,4.9,1.5,Iris-versicolor

5.5,2.3,4,1.3,Iris-versicolor

6.5,2.8,4.6,1.5,Iris-versicolor

5.7,2.8,4.5,1.3,Iris-versicolor

6.3,3.3,4.7,1.6,Iris-versicolor

4.9,2.4,3.3,1,Iris-versicolor

6.6,2.9,4.6,1.3,Iris-versicolor

5.2,2.7,3.9,1.4,Iris-versicolor

5,2,3.5,1,Iris-versicolor

5.9,3,4.2,1.5,Iris-versicolor

6,2.2,4,1,Iris-versicolor

6.1,2.9,4.7,1.4,Iris-versicolor

5.6,2.9,3.6,1.3,Iris-versicolor

6.7,3.1,4.4,1.4,Iris-versicolor

5.6,3,4.5,1.5,Iris-versicolor

5.8,2.7,4.1,1,Iris-versicolor

6.2,2.2,4.5,1.5,Iris-versicolor

5.6,2.5,3.9,1.1,Iris-versicolor

5.9,3.2,4.8,1.8,Iris-versicolor

6.1,2.8,4,1.3,Iris-versicolor

6.3,2.5,4.9,1.5,Iris-versicolor

6.1,2.8,4.7,1.2,Iris-versicolor

6.4,2.9,4.3,1.3,Iris-versicolor

6.6,3,4.4,1.4,Iris-versicolor

6.8,2.8,4.8,1.4,Iris-versicolor

6.7,3,5,1.7,Iris-versicolor

6,2.9,4.5,1.5,Iris-versicolor

5.7,2.6,3.5,1,Iris-versicolor

5.5,2.4,3.8,1.1,Iris-versicolor

5.5,2.4,3.7,1,Iris-versicolor

5.8,2.7,3.9,1.2,Iris-versicolor

6,2.7,5.1,1.6,Iris-versicolor

5.4,3,4.5,1.5,Iris-versicolor

6,3.4,4.5,1.6,Iris-versicolor

6.7,3.1,4.7,1.5,Iris-versicolor

6.3,2.3,4.4,1.3,Iris-versicolor

5.6,3,4.1,1.3,Iris-versicolor

5.5,2.5,4,1.3,Iris-versicolor

5.5,2.6,4.4,1.2,Iris-versicolor

6.1,3,4.6,1.4,Iris-versicolor

5.8,2.6,4,1.2,Iris-versicolor

5,2.3,3.3,1,Iris-versicolor

5.6,2.7,4.2,1.3,Iris-versicolor

5.7,3,4.2,1.2,Iris-versicolor

5.7,2.9,4.2,1.3,Iris-versicolor

6.2,2.9,4.3,1.3,Iris-versicolor

5.1,2.5,3,1.1,Iris-versicolor

5.7,2.8,4.1,1.3,Iris-versicolor

6.3,3.3,6,2.5,Iris-virginica

5.8,2.7,5.1,1.9,Iris-virginica

7.1,3,5.9,2.1,Iris-virginica

6.3,2.9,5.6,1.8,Iris-virginica

6.5,3,5.8,2.2,Iris-virginica

7.6,3,6.6,2.1,Iris-virginica

4.9,2.5,4.5,1.7,Iris-virginica

7.3,2.9,6.3,1.8,Iris-virginica

6.7,2.5,5.8,1.8,Iris-virginica

7.2,3.6,6.1,2.5,Iris-virginica

6.5,3.2,5.1,2,Iris-virginica

6.4,2.7,5.3,1.9,Iris-virginica

6.8,3,5.5,2.1,Iris-virginica

5.7,2.5,5,2,Iris-virginica

5.8,2.8,5.1,2.4,Iris-virginica

6.4,3.2,5.3,2.3,Iris-virginica

6.5,3,5.5,1.8,Iris-virginica

7.7,3.8,6.7,2.2,Iris-virginica

7.7,2.6,6.9,2.3,Iris-virginica

6,2.2,5,1.5,Iris-virginica

6.9,3.2,5.7,2.3,Iris-virginica

5.6,2.8,4.9,2,Iris-virginica

7.7,2.8,6.7,2,Iris-virginica

6.3,2.7,4.9,1.8,Iris-virginica

6.7,3.3,5.7,2.1,Iris-virginica

7.2,3.2,6,1.8,Iris-virginica

6.2,2.8,4.8,1.8,Iris-virginica

6.1,3,4.9,1.8,Iris-virginica

6.4,2.8,5.6,2.1,Iris-virginica

7.2,3,5.8,1.6,Iris-virginica

7.4,2.8,6.1,1.9,Iris-virginica

7.9,3.8,6.4,2,Iris-virginica

6.4,2.8,5.6,2.2,Iris-virginica

6.3,2.8,5.1,1.5,Iris-virginica

6.1,2.6,5.6,1.4,Iris-virginica

7.7,3,6.1,2.3,Iris-virginica

6.3,3.4,5.6,2.4,Iris-virginica

6.4,3.1,5.5,1.8,Iris-virginica

6,3,4.8,1.8,Iris-virginica

6.9,3.1,5.4,2.1,Iris-virginica

6.7,3.1,5.6,2.4,Iris-virginica

6.9,3.1,5.1,2.3,Iris-virginica

5.8,2.7,5.1,1.9,Iris-virginica

6.8,3.2,5.9,2.3,Iris-virginica

6.7,3.3,5.7,2.5,Iris-virginica

6.7,3,5.2,2.3,Iris-virginica

6.3,2.5,5,1.9,Iris-virginica

6.5,3,5.2,2,Iris-virginica

6.2,3.4,5.4,2.3,Iris-virginica

5.9,3,5.1,1.8,Iris-virginica

Hasilnya sama dengan filter Numeric to Nominal menggunakan GUI.

No. sepallength sepalwidth petallength petalwidth class

1 '(5.02-5.38]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

2 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

3 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

4 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

5 '(4.66-5.02]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

6 '(5.38-5.74]' '(3.68-3.92]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

7 '(-inf-4.66]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

8 '(4.66-5.02]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

9 '(-inf-4.66]' '(2.72-2.96]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

10 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

11 '(5.38-5.74]' '(3.68-3.92]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

12 '(4.66-5.02]' '(3.2-3.44]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

13 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

14 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

15 '(5.74-6.1]' '(3.92-4.16]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

16 '(5.38-5.74]' '(4.16-inf)' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

17 '(5.38-5.74]' '(3.68-3.92]' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

18 '(5.02-5.38]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

19 '(5.38-5.74]' '(3.68-3.92]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

20 '(5.02-5.38]' '(3.68-3.92]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

21 '(5.38-5.74]' '(3.2-3.44]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

22 '(5.02-5.38]' '(3.68-3.92]' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

23 '(-inf-4.66]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

24 '(5.02-5.38]' '(3.2-3.44]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

25 '(4.66-5.02]' '(3.2-3.44]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

26 '(4.66-5.02]' '(2.96-3.2]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

27 '(4.66-5.02]' '(3.2-3.44]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

28 '(5.02-5.38]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

29 '(5.02-5.38]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

30 '(4.66-5.02]' '(2.96-3.2]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

31 '(4.66-5.02]' '(2.96-3.2]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

32 '(5.38-5.74]' '(3.2-3.44]' '(-inf-1.59]' '(0.34-0.58]' Iris-setosa

33 '(5.02-5.38]' '(3.92-4.16]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

34 '(5.38-5.74]' '(4.16-inf)' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

35 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

36 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

37 '(5.38-5.74]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

38 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

39 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

40 '(5.02-5.38]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

41 '(4.66-5.02]' '(3.44-3.68]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

42 '(-inf-4.66]' '(2.24-2.48]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

43 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

44 '(4.66-5.02]' '(3.44-3.68]' '(1.59-2.18]' '(0.58-0.82]' Iris-setosa

45 '(5.02-5.38]' '(3.68-3.92]' '(1.59-2.18]' '(0.34-0.58]' Iris-setosa

46 '(4.66-5.02]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

47 '(5.02-5.38]' '(3.68-3.92]' '(1.59-2.18]' '(-inf-0.34]' Iris-setosa

48 '(-inf-4.66]' '(2.96-3.2]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

49 '(5.02-5.38]' '(3.68-3.92]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

50 '(4.66-5.02]' '(3.2-3.44]' '(-inf-1.59]' '(-inf-0.34]' Iris-setosa

51 '(6.82-7.18]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

52 '(6.1-6.46]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

53 '(6.82-7.18]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

54 '(5.38-5.74]' '(2.24-2.48]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

55 '(6.46-6.82]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

56 '(5.38-5.74]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

57 '(6.1-6.46]' '(3.2-3.44]' '(4.54-5.13]' '(1.54-1.78]' Iris-versicolor

58 '(4.66-5.02]' '(2.24-2.48]' '(2.77-3.36]' '(0.82-1.06]' Iris-versicolor

59 '(6.46-6.82]' '(2.72-2.96]' '(4.54-5.13]' '(1.06-1.3]' Iris-versicolor

60 '(5.02-5.38]' '(2.48-2.72]' '(3.36-3.95]' '(1.3-1.54]' Iris-versicolor

61 '(4.66-5.02]' '(-inf-2.24]' '(3.36-3.95]' '(0.82-1.06]' Iris-versicolor

62 '(5.74-6.1]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

63 '(5.74-6.1]' '(-inf-2.24]' '(3.95-4.54]' '(0.82-1.06]' Iris-versicolor

64 '(5.74-6.1]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

65 '(5.38-5.74]' '(2.72-2.96]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

66 '(6.46-6.82]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

67 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

68 '(5.74-6.1]' '(2.48-2.72]' '(3.95-4.54]' '(0.82-1.06]' Iris-versicolor

69 '(6.1-6.46]' '(-inf-2.24]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

70 '(5.38-5.74]' '(2.48-2.72]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

71 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-versicolor

72 '(5.74-6.1]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

73 '(6.1-6.46]' '(2.48-2.72]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

74 '(5.74-6.1]' '(2.72-2.96]' '(4.54-5.13]' '(1.06-1.3]' Iris-versicolor

75 '(6.1-6.46]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

76 '(6.46-6.82]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

77 '(6.46-6.82]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

78 '(6.46-6.82]' '(2.96-3.2]' '(4.54-5.13]' '(1.54-1.78]' Iris-versicolor

79 '(5.74-6.1]' '(2.72-2.96]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

80 '(5.38-5.74]' '(2.48-2.72]' '(3.36-3.95]' '(0.82-1.06]' Iris-versicolor

81 '(5.38-5.74]' '(2.24-2.48]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

82 '(5.38-5.74]' '(2.24-2.48]' '(3.36-3.95]' '(0.82-1.06]' Iris-versicolor

83 '(5.74-6.1]' '(2.48-2.72]' '(3.36-3.95]' '(1.06-1.3]' Iris-versicolor

84 '(5.74-6.1]' '(2.48-2.72]' '(4.54-5.13]' '(1.54-1.78]' Iris-versicolor

85 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.3-1.54]' Iris-versicolor

86 '(5.74-6.1]' '(3.2-3.44]' '(3.95-4.54]' '(1.54-1.78]' Iris-versicolor

87 '(6.46-6.82]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

88 '(6.1-6.46]' '(2.24-2.48]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

89 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

90 '(5.38-5.74]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

91 '(5.38-5.74]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

92 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.3-1.54]' Iris-versicolor

93 '(5.74-6.1]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

94 '(4.66-5.02]' '(2.24-2.48]' '(2.77-3.36]' '(0.82-1.06]' Iris-versicolor

95 '(5.38-5.74]' '(2.48-2.72]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

96 '(5.38-5.74]' '(2.96-3.2]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

97 '(5.38-5.74]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

98 '(6.1-6.46]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

99 '(5.02-5.38]' '(2.48-2.72]' '(2.77-3.36]' '(1.06-1.3]' Iris-versicolor

100 '(5.38-5.74]' '(2.72-2.96]' '(3.95-4.54]' '(1.06-1.3]' Iris-versicolor

101 '(6.1-6.46]' '(3.2-3.44]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

102 '(5.74-6.1]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

103 '(6.82-7.18]' '(2.96-3.2]' '(5.72-6.31]' '(2.02-2.26]' Iris-virginica

104 '(6.1-6.46]' '(2.72-2.96]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

105 '(6.46-6.82]' '(2.96-3.2]' '(5.72-6.31]' '(2.02-2.26]' Iris-virginica

106 '(7.54-inf)' '(2.96-3.2]' '(6.31-inf)' '(2.02-2.26]' Iris-virginica

107 '(4.66-5.02]' '(2.48-2.72]' '(3.95-4.54]' '(1.54-1.78]' Iris-virginica

108 '(7.18-7.54]' '(2.72-2.96]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

109 '(6.46-6.82]' '(2.48-2.72]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

110 '(7.18-7.54]' '(3.44-3.68]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

111 '(6.46-6.82]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

112 '(6.1-6.46]' '(2.48-2.72]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

113 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

114 '(5.38-5.74]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

115 '(5.74-6.1]' '(2.72-2.96]' '(4.54-5.13]' '(2.26-inf)' Iris-virginica

116 '(6.1-6.46]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

117 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

118 '(7.54-inf)' '(3.68-3.92]' '(6.31-inf)' '(2.02-2.26]' Iris-virginica

119 '(7.54-inf)' '(2.48-2.72]' '(6.31-inf)' '(2.26-inf)' Iris-virginica

120 '(5.74-6.1]' '(-inf-2.24]' '(4.54-5.13]' '(1.3-1.54]' Iris-virginica

121 '(6.82-7.18]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

122 '(5.38-5.74]' '(2.72-2.96]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

123 '(7.54-inf)' '(2.72-2.96]' '(6.31-inf)' '(1.78-2.02]' Iris-virginica

124 '(6.1-6.46]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

125 '(6.46-6.82]' '(3.2-3.44]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

126 '(7.18-7.54]' '(2.96-3.2]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

127 '(6.1-6.46]' '(2.72-2.96]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

128 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

129 '(6.1-6.46]' '(2.72-2.96]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

130 '(7.18-7.54]' '(2.96-3.2]' '(5.72-6.31]' '(1.54-1.78]' Iris-virginica

131 '(7.18-7.54]' '(2.72-2.96]' '(5.72-6.31]' '(1.78-2.02]' Iris-virginica

132 '(7.54-inf)' '(3.68-3.92]' '(6.31-inf)' '(1.78-2.02]' Iris-virginica

133 '(6.1-6.46]' '(2.72-2.96]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

134 '(6.1-6.46]' '(2.72-2.96]' '(4.54-5.13]' '(1.3-1.54]' Iris-virginica

135 '(5.74-6.1]' '(2.48-2.72]' '(5.13-5.72]' '(1.3-1.54]' Iris-virginica

136 '(7.54-inf)' '(2.96-3.2]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

137 '(6.1-6.46]' '(3.2-3.44]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

138 '(6.1-6.46]' '(2.96-3.2]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

139 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

140 '(6.82-7.18]' '(2.96-3.2]' '(5.13-5.72]' '(2.02-2.26]' Iris-virginica

141 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

142 '(6.82-7.18]' '(2.96-3.2]' '(4.54-5.13]' '(2.26-inf)' Iris-virginica

143 '(5.74-6.1]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

144 '(6.46-6.82]' '(2.96-3.2]' '(5.72-6.31]' '(2.26-inf)' Iris-virginica

145 '(6.46-6.82]' '(3.2-3.44]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

146 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

147 '(6.1-6.46]' '(2.48-2.72]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

148 '(6.46-6.82]' '(2.96-3.2]' '(5.13-5.72]' '(1.78-2.02]' Iris-virginica

149 '(6.1-6.46]' '(3.2-3.44]' '(5.13-5.72]' '(2.26-inf)' Iris-virginica

150 '(5.74-6.1]' '(2.96-3.2]' '(4.54-5.13]' '(1.78-2.02]' Iris-virginica

1. Pembelajaran dataset dengan 10 Cross Validation

Hasil dari kelas Java

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 0.030 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 3 | b = Iris-versicolor

0 2 48 | c = Iris-virginica

Hasilnya sama dengan hasil dari GUI

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 %

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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 0.030 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 3 | b = Iris-versicolor

0 2 48 | c = Iris-virginica

1. Pembelajaran dengan full training dengan classifier J48.

Hasil dari Java.

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 MCC ROC Area PRC Area Class

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Iris-setosa

0.980 0.020 0.961 0.980 0.970 0.955 0.990 0.969 Iris-versicolor

0.960 0.010 0.980 0.960 0.970 0.955 0.990 0.970 Iris-virginica

Weighted Avg. 0.980 0.010 0.980 0.980 0.980 0.970 0.993 0.980

=== 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

Hasilnya sama dengan hasil dari GUI.

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 MCC ROC Area PRC Area Class

1.000 0.000 1.000 1.000 1.000 1.000 1.000 1.000 Iris-setosa

0.980 0.020 0.961 0.980 0.970 0.955 0.990 0.969 Iris-versicolor

0.960 0.010 0.980 0.960 0.970 0.955 0.990 0.970 Iris-virginica

Weighted Avg. 0.980 0.010 0.980 0.980 0.980 0.970 0.993 0.980

=== Confusion Matrix ===

a b c <-- classified as

50 0 0 | a = Iris-setosa

0 49 1 | b = Iris-versicolor

1. 2 48 | c = Iris-virginica
2. Save model

Bagian ini di uji dengan penyimpanan klasifikasi yang lama, restart program, kemudian load model

Sebelum di-close

Model is :

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

Model saved.

1. Membaca model/hipotesis dari file eksternal

Setelah di close

Model loaded.

Model is :

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

Terlihat bahwa model tersimpan dan terbaca dengan baik

1. Menambahkan instans baru

Instans baru diinput dari keyboard dengan format empat digit dloat dan satu string.

Misalnya inputnya 1 2 3 4 5 “Iris-setosa” akan menambahkan satu instans baru. Dataset ketika diprint memiliki tambahan satu instans di data terbawah.

1,2,3,4,5,Iris-setosa

1. Melakukan pembelajaran dengan memanfaatkan dataset yang ada

Pembelajaran berhasil. Misalnya untuk input 7.1,3.0,5.9,2.5 akan mengeluarkan hasil iris-virginica.

**7.1 3.0 5.9 2.5**

Iris-virginica

**KODE SUMBER**

1. **import** java.io.\*;
2. **import** java.util.Arrays;
3. **import** java.util.Random;
4. **import** java.util.Scanner;
5. **import** weka.classifiers.Classifier;
6. **import** weka.classifiers.Evaluation;
7. **import** weka.classifiers.bayes.NaiveBayes;
8. **import** weka.classifiers.trees.J48;
9. **import** weka.core.\*;
10. **import** weka.clusterers.\*;
11. **import** weka.filters.\*;
12. **import** weka.filters.unsupervised.attribute.Remove;
13. **import** weka.core.Instances;
14. **import** **static** weka.core.Instances.test;
15. **import** weka.filters.Filter;
16. **import** weka.filters.unsupervised.attribute.Discretize;
17. **import** weka.filters.unsupervised.attribute.NumericToNominal;
19. /\*\*
20. \* This class shows how to perform a "classes-to-clusters"
21. \* evaluation like in the Explorer using EM. The class needs as
22. \* first parameter an ARFF file to work on. The last attribute is
23. \* interpreted as the class attribute.
24. \* This code is based on the method "startClusterer" of the
25. \* "weka.gui.explorer.ClustererPanel" class and the
26. \* "evaluateClusterer" method of the "weka.clusterers.ClusterEvaluation"
27. \* class.
28. \*
29. \* @author  Ikhwanul Muslimin 13514020
30. \* @author  Hafizh Afkar Makmur 13514062
31. \*/
32. **public** **class** Tucil2AI {
34. Instances dataset;
35. Classifier cls;
37. **public** Tucil2AI() {
39. }
40. //Read data set
41. **public** **void** readDataSet(String filename) **throws** IOException, Exception{
42. BufferedReader inputReader = **null**;
44. **try** {
45. inputReader = **new** BufferedReader(**new** FileReader(filename));
46. dataset = **new** Instances(inputReader);
47. dataset.setClassIndex(dataset.numAttributes() - 1);
48. } **catch** (FileNotFoundException ex) {
49. System.err.println("File not found: " + filename);
50. }
52. }
54. **public** **void** printDataSet() {
55. System.out.println(dataset);
56. }
57. //numeric to nominal
58. **public** **void** useFilterNtoN() **throws** IOException, Exception {
59. //load training instances
61. NumericToNominal convert= **new** NumericToNominal();
62. String[] options= **new** String[2];
63. options[0]="-R";
64. options[1]="1-2";  //range of variables to make numeric
66. convert.setOptions(options);
67. convert.setInputFormat(dataset);
68. Instances newData=Filter.useFilter(dataset, convert);
69. dataset = newData;
70. System.out.println(newData);
71. }
73. **public** **void** useFilterDiscretize() **throws** IOException, Exception {
74. //load training instances
76. Discretize convert= **new** Discretize();
77. String[] options= **new** String[2];
78. options[0]="-R";
79. options[1]="1-2";  //range of variables to make numeric
81. convert.setOptions(options);
82. convert.setInputFormat(dataset);
83. Instances newData=Filter.useFilter(dataset, convert);
84. dataset = newData;
85. System.out.println(newData);
86. }
88. //Cross Fold Validation
89. **public** **void** train10Fold(Classifier clsf, **int** folds) **throws** Exception {
90. Evaluation eval = **new** Evaluation(dataset);
91. Random rand = **new** Random(1);  // using seed = 1
92. eval.crossValidateModel(clsf, dataset, folds, rand);
93. // output evaluation
94. System.out.println(eval.toSummaryString());
95. System.out.println(eval.toClassDetailsString());
96. System.out.println(eval.toMatrixString());
97. }
99. **public** **void** trainFull(Classifier clsf) **throws** Exception {
100. // output evaluation
101. Evaluation eval = **new** Evaluation(dataset);
102. eval.evaluateModel(clsf, **new** Instances(dataset));
103. System.out.println(eval.toSummaryString());
104. System.out.println(eval.toClassDetailsString());
105. System.out.println(eval.toMatrixString());
106. }
108. **public** **void** saveModel(String filename) **throws** Exception {
109. SerializationHelper.write(filename, cls);
110. System.out.println("Model is :");
111. System.out.println(cls);
112. System.out.println("Model saved.");
113. }
115. **public** **void** loadModel(String filename) **throws** Exception {
116. cls = (Classifier) SerializationHelper.read(filename);
117. System.out.println("Model loaded.");
118. System.out.println("Model is :");
119. System.out.println(cls);
120. }
122. **public** **void** createInstance() {
123. Scanner sc = **new** Scanner(System.in).useDelimiter(" ");
125. **double**[] values = **new** **double**[dataset.numAttributes()];
126. values[0] = sc.nextFloat();
127. values[1] = sc.nextFloat();
128. values[2] = sc.nextFloat();
129. values[3] = sc.nextFloat();
130. Instance inst = **new** DenseInstance(1.0, values);
131. /\*Instance inst = new DenseInstance();
132. for (int i=0; i<dataset.numAttributes(); i++) {
133. inst.setValue(i, sc.next());
134. }\*/
135. dataset.add(inst);
136. dataset.setClassIndex(dataset.numAttributes() - 1);
137. System.out.println("Instance saved.");
138. }
140. **public** **void** classifyInstance() **throws** Exception {
141. Scanner sc = **new** Scanner(System.in);
142. Instances test = **new** Instances(dataset);
144. test.setClassIndex(test.numAttributes() - 1);
146. **double** clsLabel = cls.classifyInstance(test.instance(test.numInstances()-1));
147. test.instance(test.numInstances()-1).setClassValue(clsLabel);
148. System.out.println(test.classAttribute().value((**int**) clsLabel));
149. }
150. **public** **static** **void** main(String[] args) {
151. **int** pil;
152. String filename = "iris.arff";
153. Tucil2AI test = **new** Tucil2AI();
154. //READ DATASET
155. **try** {
156. test.readDataSet(filename);
157. } **catch**(Exception e) {
159. }
160. System.out.println("Dataset loaded.");
161. **do** {
162. //MENU
163. System.out.println("\nSilakan pilih satu:");
164. System.out.println("1. Filter Discretize");
165. System.out.println("2. Filter Numeric to Nominal");
166. System.out.println("3. 10 Cross Folds Validation");
167. System.out.println("4. Full training Validation");
168. System.out.println("5. Save model");
169. System.out.println("6. Load model");
170. System.out.println("7. Instance baru");
171. System.out.println("8. Pembelajaran");
172. System.out.println("9. Keluar");
173. Scanner in = **new** Scanner(System.in);
174. pil = in.nextInt();
175. **if** (pil==1 ) {
176. //FILTER Discretize
177. **try** {
178. test.useFilterDiscretize();
179. } **catch**(Exception e) {
180. System.out.println("Gagal melakukan filter Discretize");
181. }
182. } **else**
183. **if** (pil==2) {
184. //FILTER Numeric to Nominal
185. **try** {
186. test.useFilterNtoN();
187. } **catch**(Exception e) {
188. System.out.println("Gagal melakukan filter Numeric to Nominal");
189. }
190. } **else**
191. **if** (pil==3) {
192. System.out.println("10 Cross Validastion dengan Classifier J48");
193. //10 Cross Val Split
194. **try** {
195. test.cls = **new** J48();
196. test.cls.buildClassifier(test.dataset);
197. test.train10Fold(test.cls, 10);
198. } **catch**(Exception e) {
199. System.out.println("Operasi gagal");
200. System.out.println(e);
201. }
202. } **else**
203. **if** (pil==4){
204. //Full train
205. **try** {
206. System.out.println("Full training dengan Classifier J48");
207. test.cls = **new** J48();
208. test.cls.buildClassifier(test.dataset);
209. test.trainFull(test.cls);
210. } **catch**(Exception e) {
211. System.out.println("Operasi gagal");
212. System.out.println(e.toString());
213. }
214. } **else**
216. **if** (pil==5) {
217. **try** {
218. test.saveModel("savedmodel.model");
219. } **catch** (Exception e) {
220. System.out.println("Gagal menyimpan.");
221. System.out.println(e);
222. }
223. } **else**
224. **if** (pil==6) {
225. **try** {
226. test.loadModel("savedmodel.model");
227. } **catch** (Exception e) {
228. System.out.println("Gagal memuat.");
229. System.out.println(e);
230. }
231. } **else**
232. **if** (pil==7) {
233. **try** {
234. test.createInstance();
235. } **catch** (Exception e) {
236. System.out.println("Gagal membuat instans baru");
237. System.out.println(e);
238. }
239. } **else**
240. **if** (pil==8) {
241. **try** {
242. test.classifyInstance();
243. } **catch** (Exception e) {
244. System.out.println("Gagal mengklasifikasi.");
245. System.out.println(e);
246. }
247. }
248. **if** (pil==0) {
249. test.printDataSet();
250. }
251. } **while** (pil!=9);
252. }
253. }