**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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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

Model disimpan dengan nama savedmodel.model pada folder yang sama dengan folder source code.

Model saved.

1. Load model

Model dimuat dari model bernama savedmodel.model pada folder yang sama dengan folder source code.

Model loaded.

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**

import java.io.\*;

import java.util.Arrays;

import java.util.Random;

import java.util.Scanner;

import weka.classifiers.Classifier;

import weka.classifiers.Evaluation;

import weka.classifiers.bayes.NaiveBayes;

import weka.classifiers.trees.J48;

import weka.core.\*;

import weka.clusterers.\*;

import weka.filters.\*;

import weka.filters.unsupervised.attribute.Remove;

import weka.core.Instances;

import static weka.core.Instances.test;

import weka.filters.Filter;

import weka.filters.unsupervised.attribute.Discretize;

import weka.filters.unsupervised.attribute.NumericToNominal;

/\*\*

\* This class shows how to perform a "classes-to-clusters"

\* evaluation like in the Explorer using EM. The class needs as

\* first parameter an ARFF file to work on. The last attribute is

\* interpreted as the class attribute.

\* This code is based on the method "startClusterer" of the

\* "weka.gui.explorer.ClustererPanel" class and the

\* "evaluateClusterer" method of the "weka.clusterers.ClusterEvaluation"

\* class.

\*

\* @author Ikhwanul Muslimin 13514020

\* @author Hafizh Afkar Makmur 13514062

\*/

public class Tucil2AI {

Instances dataset;

Classifier cls;

public Tucil2AI() {

}

//Read data set

public void readDataSet(String filename) throws IOException, Exception{

BufferedReader inputReader = null;

try {

inputReader = new BufferedReader(new FileReader(filename));

dataset = new Instances(inputReader);

dataset.setClassIndex(dataset.numAttributes() - 1);

} catch (FileNotFoundException ex) {

System.err.println("File not found: " + filename);

}

}

public void printDataSet() {

System.out.println(dataset);

}

//numeric to nominal

public void useFilterNtoN() throws IOException, Exception {

//load training instances

NumericToNominal convert= new NumericToNominal();

String[] options= new String[2];

options[0]="-R";

options[1]="1-2"; //range of variables to make numeric

convert.setOptions(options);

convert.setInputFormat(dataset);

Instances newData=Filter.useFilter(dataset, convert);

dataset = newData;

System.out.println(newData);

}

public void useFilterDiscretize() throws IOException, Exception {

//load training instances

Discretize convert= new Discretize();

String[] options= new String[2];

options[0]="-R";

options[1]="1-2"; //range of variables to make numeric

convert.setOptions(options);

convert.setInputFormat(dataset);

Instances newData=Filter.useFilter(dataset, convert);

dataset = newData;

System.out.println(newData);

}

//Cross Fold Validation

public void train10Fold(Classifier clsf, int folds) throws Exception {

Evaluation eval = new Evaluation(dataset);

Random rand = new Random(1); // using seed = 1

eval.crossValidateModel(clsf, dataset, folds, rand);

// output evaluation

System.out.println(eval.toSummaryString());

System.out.println(eval.toClassDetailsString());

System.out.println(eval.toMatrixString());

}

public void trainFull(Classifier clsf) throws Exception {

// output evaluation

Evaluation eval = new Evaluation(dataset);

eval.evaluateModel(clsf, new Instances(dataset));

System.out.println(eval.toSummaryString());

System.out.println(eval.toClassDetailsString());

System.out.println(eval.toMatrixString());

}

public void saveModel(String filename) throws Exception {

SerializationHelper.write(filename, cls);

System.out.println("Model saved.");

}

public void loadModel(String filename) throws Exception {

cls = (Classifier) SerializationHelper.read(filename);

System.out.println("Model loaded.");

}

public void createInstance() {

Scanner sc = new Scanner(System.in).useDelimiter(" ");

double[] values = new double[dataset.numAttributes()];

values[0] = sc.nextFloat();

values[1] = sc.nextFloat();

values[2] = sc.nextFloat();

values[3] = sc.nextFloat();

Instance inst = new DenseInstance(1.0, values);

/\*Instance inst = new DenseInstance();

for (int i=0; i<dataset.numAttributes(); i++) {

inst.setValue(i, sc.next());

}\*/

dataset.add(inst);

dataset.setClassIndex(dataset.numAttributes() - 1);

}

public void classifyInstance() throws Exception {

Scanner sc = new Scanner(System.in);

Instances test = new Instances(dataset,0);

double[] values = new double[test.numAttributes()];

values[0] = sc.nextFloat();

values[1] = sc.nextFloat();

values[2] = sc.nextFloat();

values[3] = sc.nextFloat();

Instance inst = new DenseInstance(1.0, values);

test.add(inst);

test.setClassIndex(test.numAttributes() - 1);

double clsLabel = cls.classifyInstance(test.instance(0));

test.instance(0).setClassValue(clsLabel);

System.out.println(test.classAttribute().value((int) clsLabel));

}

public static void main(String[] args) {

int pil;

String filename = "iris.arff";

Tucil2AI test = new Tucil2AI();

//READ DATASET

try {

test.readDataSet(filename);

} catch(Exception e) {

}

System.out.println("Dataset loaded.");

do {

//MENU

System.out.println("\nSilakan pilih satu:");

System.out.println("1. Filter Discretize");

System.out.println("2. Filter Numeric to Nominal");

System.out.println("3. 10 Cross Folds Validation");

System.out.println("4. Full training Validation");

System.out.println("5. Save model");

System.out.println("6. Load model");

System.out.println("7. Instance baru");

System.out.println("8. Pembelajaran");

System.out.println("9. Keluar");

Scanner in = new Scanner(System.in);

pil = in.nextInt();

if (pil==1 ) {

//FILTER Discretize

try {

test.useFilterDiscretize();

} catch(Exception e) {

System.out.println("Gagal melakukan filter Discretize");

}

} else

if (pil==2) {

//FILTER Numeric to Nominal

try {

test.useFilterNtoN();

} catch(Exception e) {

System.out.println("Gagal melakukan filter Numeric to Nominal");

}

} else

if (pil==3) {

System.out.println("10 Cross Validastion dengan Classifier J48");

//10 Cross Val Split

try {

test.cls = new J48();

test.train10Fold(test.cls, 10);

} catch(Exception e) {

System.out.println("Operasi gagal");

System.out.println(e);

}

} else

if (pil==4){

//Full train

try {

System.out.println("Full training dengan Classifier J48");

test.cls = new J48();

test.cls.buildClassifier(test.dataset);

test.trainFull(test.cls);

} catch(Exception e) {

System.out.println("Operasi gagal");

System.out.println(e.toString());

}

} else

if (pil==5) {

try {

test.saveModel("savedmodel.model");

} catch (Exception e) {

System.out.println("Gagal menyimpan.");

System.out.println(e);

}

} else

if (pil==6) {

try {

test.loadModel("savedmodel.model");

} catch (Exception e) {

System.out.println("Gagal memuat.");

System.out.println(e);

}

} else

if (pil==7) {

try {

test.createInstance();

} catch (Exception e) {

System.out.println("Gagal membuat instans baru");

System.out.println(e);

}

} else

if (pil==8) {

try {

test.classifyInstance();

} catch (Exception e) {

System.out.println("Gagal mengklasifikasi.");

System.out.println(e);

}

}

if (pil==0) {

test.printDataSet();

}

} while (pil!=9);

}

}