

# Weka: Classification

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# Weka: building “classifiers”

- Classifiers in WEKA are models for predicting nominal or numeric quantities
- Implemented learning schemes include:
  - Decision trees and lists, instance-based classifiers, support vector machines, multi-layer perceptrons, logistic regression, Bayes’ nets, ...

Preprocess

**Classify**

Cluster

Associate

Select attributes

Visualize

Classifier

Choose

ZeroR

Test options

Use training set

Supplied test set

Set...

Cross-validation Folds

Percentage split %

More options...

(Nom) class

Start

Stop

Result list (right-click for options)

Classifier output

Status

OK

Log



x 0

Preprocess

**Classify**

Cluster

Associate

Select attributes

Visualize

Classifier

Choose **ZeroR**

Test options

Use training set

Supplied test set

Cross-validation Folds

Percentage split %

(Nom) class

Result list (right-click for options)

Classifier output

Status

OK

 x 0

Preprocess

**Classify**

Cluster

Associate

Select attributes

Visualize

Classifier

- weka
  - classifiers
    - bayes
    - functions
    - lazy
    - meta
    - misc
    - trees
      - adtree
        - DecisionStump
        - Id3
      - j48
        - J48**
      - lmt
      - m5
        - RandomForest
        - RandomTree
        - REPTree
        - UserClassifier
    - rules

Classifier output

Status

OK

Log



Preprocess

**Classify**

Cluster

Associate

Select attributes

Visualize

Classifier

Choose

J48 -C 0.25 -M 2

Test options

Use training set

Supplied test set

Set...

Cross-validation

Folds

10

Percentage split

%

66

More options...

(Nom) class



Start

Stop

Result list (right-click for options)

Classifier output

Status

OK

Log



x 0

Preprocess

**Classify**

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Select attributes

Visualize

Classifier

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

Test options

Use training set

Supplied test set

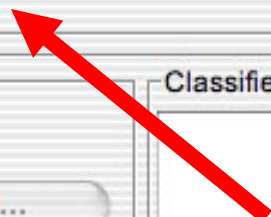
Cross-validation Folds

Percentage split %

(Nom) class

Result list (right-click for options)

Classifier output



Status

OK

x 0

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Classify

Cluster

Associate

Select attributes

Visualize

Classifier

Choose J48 -C 0.25 -M 2

Test options

 Use training set Supplied test set Set... Cross-validation Folds 10 Percentage split % 66

More options...

(Nom) class

Start

Stop

Result list (right-click for options)

weka.gui.GenericObjectEditor

weka.classifiers.trees.j48.J48

binarySplits False

confidenceFactor 0.25

minNumObj 2

numFolds 3

reducedErrorPruning False

saveInstanceData False

subtreeRaising True

unpruned False

useLaplace False

Open...

Save...

OK

Cancel

Status

OK

Log

 x 0



Preprocess

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Classifier

Choose

J48 -C 0.25 -M 2

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Supplied test set

Cross-validation Folds

Percentage split %

(Nom) class

Result list (right-click for options)



weka.gui.GenericObjectEditor

weka.classifiers.trees.j48.J48

binarySplits

confidenceFactor

minNumObj

numFolds

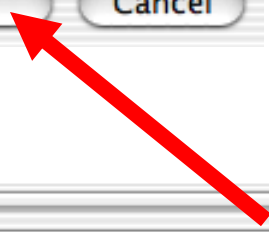
reducedErrorPruning

saveInstanceData

subtreeRaising

unpruned

useLaplace



Status

OK

x 0

Preprocess

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Cluster

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Classifier

Choose

J48 -C 0.25 -M 2

Test options

Use training set

Supplied test set

Set...

Cross-validation Folds 10

Percentage split % 66

More options...

(Nom) class

Start

Stop

Result list (right-click for options)

Classifier output

Status

OK

Log



x 0

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

Test options

Use training set

Supplied test set

Cross-validation Folds

Percentage split %

(Nom) class

Result list (right-click for options)

Classifier output

Status  
OK

Preprocess

**Classify**

Cluster

Associate

Select attributes

Visualize

Classifier

Choose

J48 -C 0.25 -M 2

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Use training set

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Set...

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x 0

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Choose J48 -C 0.25 -M 2

Test options

 Use training set Supplied test set Set... Cross-validation Folds 10 Percentage split % 66

More options...

(Nom) class

Start

Stop

Result list (right-click for options)

Classifier output

Classifier evaluation opt

 Output model Output per-class stats Output entropy evaluation measures Output confusion matrix Store predictions for visualization Output text predictions on test set Cost-sensitive evaluation Set...

Random seed for XVal / % Split 1

OK

Status

OK

Log

 x 0

Preprocess

**Classify**

Cluster

Associate

Select attributes

Visualize

Classifier

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

Test options

Use training set

Supplied test set

Cross-validation Folds

Percentage split %

(Nom) class

Result list (right-click for options)

Classifier output

Classifier evaluation opt

Output model

Output per-class stats

Output entropy evaluation measures

Output confusion matrix

Store predictions for visualization

Output text predictions on test set

Cost-sensitive evaluation

Random seed for XVal / % Split



Status

OK

 x 0

Preprocess

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Use training set

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Cross-validation Folds 10

Percentage split % 66

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(Nom) class

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Choose J48 -C 0.25 -M 2

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More options...

(Nom) class

Start

Stop

Result list (right-click for options)

11:49:05 - trees.j48.J48

Classifier output

=== Run information ===

Scheme: weka.classifiers.trees.j48.J48 -C 0.25 -M 2

Relation: iris

Instances: 150

Attributes: 5  
sepalength  
sepalwidth  
petallength  
petalwidth  
class

Test mode: split 66% train, remainder test

=== Classifier model (full training set) ===

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

Status

OK

Log

 x 0

Preprocess

Classify

Cluster

Associate

Select attributes

Visualize

Classifier

Choose J48 -C 0.25 -M 2

Test options

 Use training set Supplied test set Set... Cross-validation Folds 10 Percentage split % 66

More options...

(Nom) class

Start

Stop

Result list (right-click for options)

11:49:05 - trees.j48.J48

Classifier output

=== Run information ===

Scheme: weka.classifiers.trees.j48.J48 -C 0.25 -M 2

Relation: iris

Instances: 150

Attributes: 5

sepalength

sepalwidth

petallength

petalwidth

class

Test mode: split 66% train, remainder test

=== Classifier model (full training set) ===

J48 pruned tree

-----  
petalwidth <= 0.6: Iris-setosa (50.0)

petalwidth &gt; 0.6

| petalwidth &lt;= 1.7

| | petallength &lt;= 4.9: Iris-versicolor (48.0/1.0)

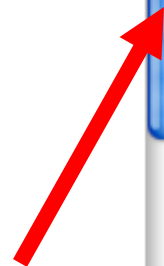
| | petallength &gt; 4.9

| | | petalwidth &lt;= 1.5: Iris-virginica (3.0)

| | | petalwidth &gt; 1.5: Iris-versicolor (3.0/1.0)

| petalwidth &gt; 1.7: Iris-virginica (46.0/1.0)

Number of Leaves : 5



Status

OK

Log



x 0

Preprocess

Classify

Cluster

Associate

Select attributes

Visualize

Classifier

Choose J48 -C 0.25 -M 2

Test options

 Use training set Supplied test set Set... Cross-validation Folds 10 Percentage split % 66

More options...

(Nom) class

Start

Stop

Result list (right-click for options)

11:49:05 - trees.j48.J48

Classifier output

Time taken to build model: 0.24 seconds

=== Evaluation on test split ===

=== Summary ===

Correctly Classified Instances	49	96.0784 %
Incorrectly Classified Instances	2	3.9216 %
Kappa statistic	0.9408	
Mean absolute error	0.0396	
Root mean squared error	0.1579	
Relative absolute error	8.8979 %	
Root relative squared error	33.4091 %	
Total Number of Instances	51	

=== Detailed Accuracy By Class ===

TP Rate	FP Rate	Precision	Recall	F-Measure	Class
1	0	1	1	1	Iris-setosa
1	0.063	0.905	1	0.95	Iris-versicolor
0.882	0	1	0.882	0.938	Iris-virginica

=== Confusion Matrix ===

a	b	c	<-- classified as
15	0	0	a = Iris-setosa
0	19	0	b = Iris-versicolor
0	2	15	c = Iris-virginica

Status

OK

Log

x 0