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CPTS 434

Neural Network Design & Applications

09-24-2019

Homework #2

KNN Classifier

```
=== Run information ===

Scheme:      weka.classifiers.lazy.IBk -K 5 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""
Relation:    leukemia gene expression data names changed
Instances:   72
Attributes:  151
              [list of attributes omitted]
Test mode:   5-fold cross-validation

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

IB1 instance-based classifier
using 5 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances      68          94.4444 %
Incorrectly Classified Instances     4          5.5556 %
Kappa statistic                    0.88
Mean absolute error                  0.0917
Root mean squared error              0.2235
Relative absolute error              19.2509 %
Root relative squared error          45.7979 %
Total Number of Instances           72

=== Detailed Accuracy By Class ===

               TP Rate  FP Rate  Precision  Recall  F-Measure  MCC      ROC Area  PRC Area  Class
               1.000    0.143    0.917      1.000    0.957      0.886    0.976    0.978    ALL
               0.857    0.000    1.000      0.857    0.923      0.886    0.976    0.967    AML
Weighted Avg.    0.944    0.087    0.949      0.944    0.944      0.886    0.976    0.973

=== Confusion Matrix ===

  a  b  <-- classified as
 44  0 | a = ALL
  4 24 | b = AML
```

=== Confusion Matrix ===

a b <-- classified as

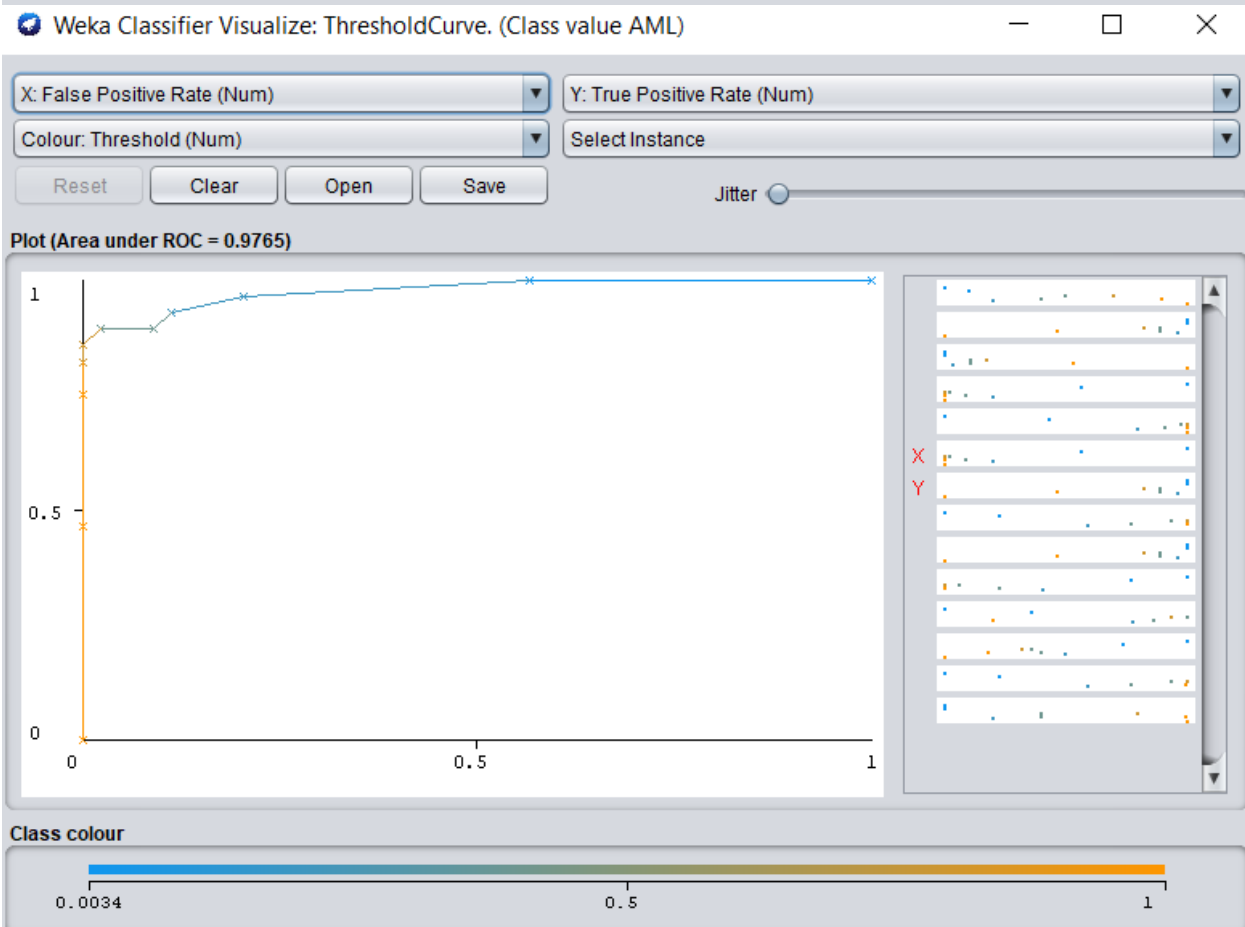
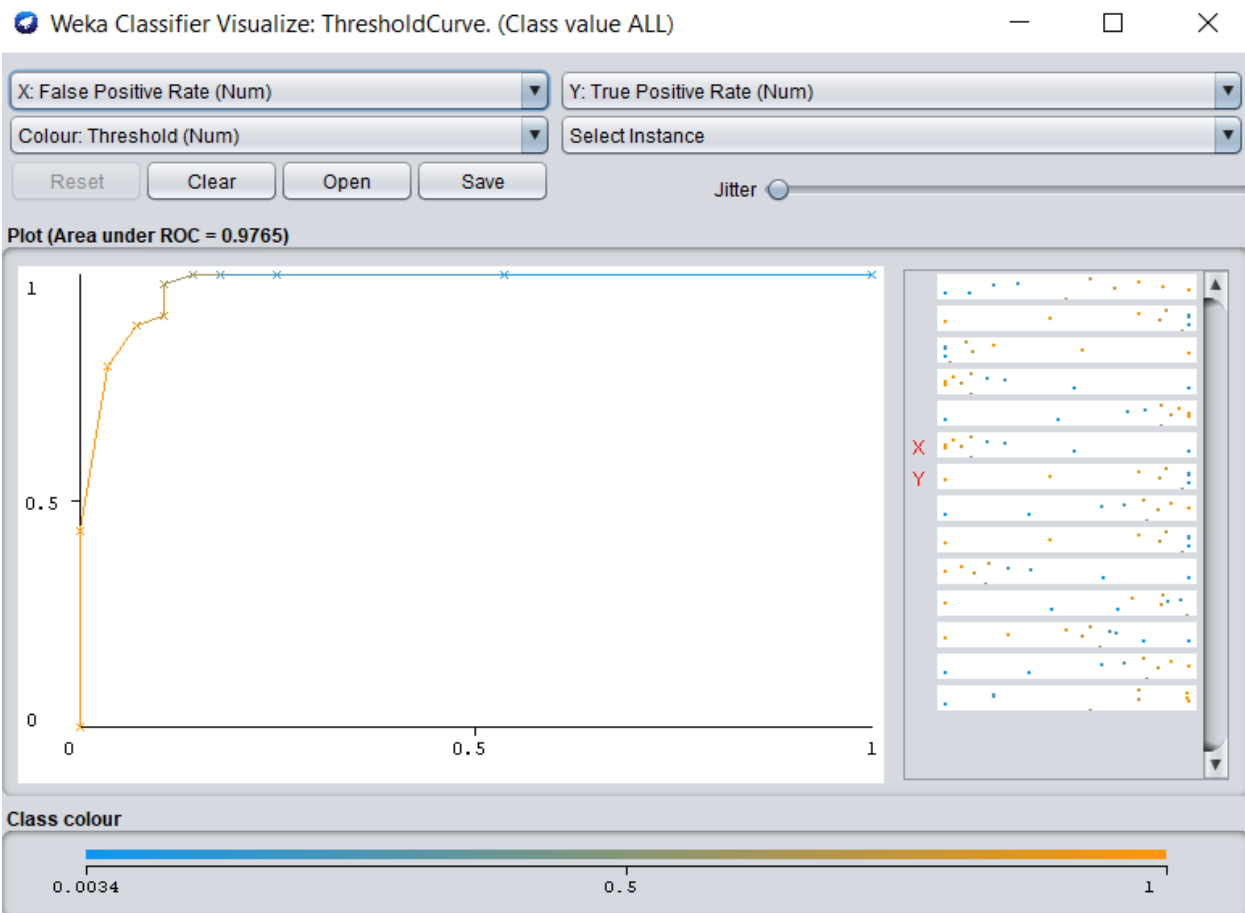
24 4 | b = AML

0 44 | a = ALL

TP rate = $24/28 = 0.857\%$

FP rate = $0/44 = 0.000\%$

This matches the calculated accuracy provided by WEKA.



ZeroR Classifier

=== Run information ===

Scheme: weka.classifiers.rules.ZeroR
Relation: leukemia gene expression data names changed
Instances: 72
Attributes: 151
[list of attributes omitted]
Test mode: 5-fold cross-validation

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

ZeroR predicts class value: ALL

Time taken to build model: 0 seconds

=== Stratified cross-validation ===

=== Summary ===

Correctly Classified Instances	44	61.1111 %
Incorrectly Classified Instances	28	38.8889 %
Kappa statistic	0	
Mean absolute error	0.4765	
Root mean squared error	0.4879	
Relative absolute error	100	%
Root relative squared error	100	%
Total Number of Instances	72	

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	1.000	1.000	0.611	1.000	0.759	?	0.469	0.596	ALL
	0.000	0.000	?	0.000	?	?	0.469	0.373	AML
Weighted Avg.	0.611	0.611	?	0.611	?	?	0.469	0.509	

=== Confusion Matrix ===

a b <-- classified as
44 0 | a = ALL
28 0 | b = AML

==== Confusion Matrix ====

a b <-- classified as

44 0 | b = AML

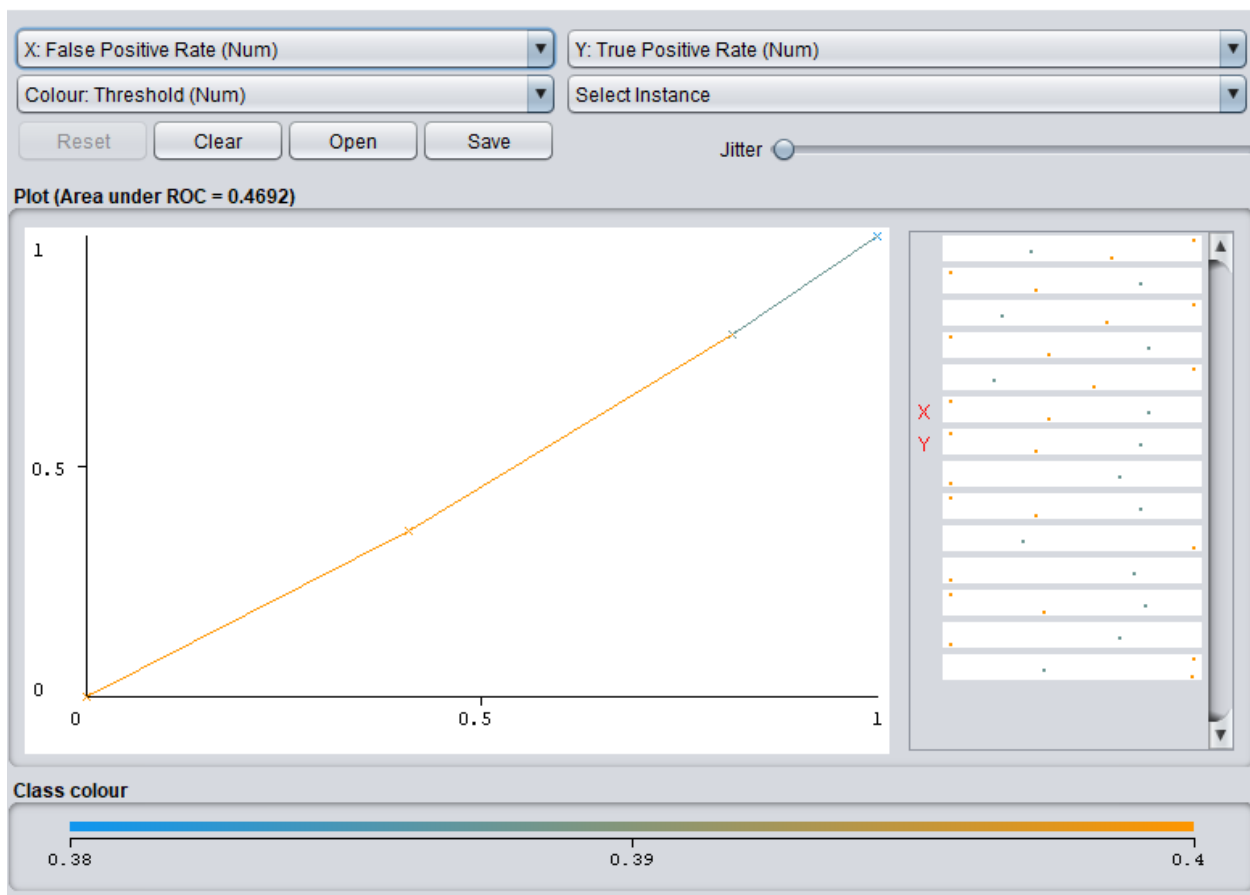
28 0 | a = ALL

TP rate = $0/28 = 0.000\%$

FP rate = $0/44 = 0.000\%$

This matches the calculated accuracy provided by WEKA.

Weka Classifier Visualize: ThresholdCurve. (Class value AML)



Weka Classifier Visualize: ThresholdCurve. (Class value ALL)

