

KNN

Record % correctly classified and confusion matrix (ALL positive class). Derive the confusion matrix when AML is the positive class. Calculate the class-dependent TP and FP rates. Show your work and compare to Weka.

Correctly Classified Instances 68 94.4444 %

TP Rate	FP Rate	Class
1.000	0.143	ALL
0.857	0.000	AML

True Class	Predicted class	
	Yes	No
Yes	TP: True Positive	FN: False Negative
No	FP: False Positive	TN: True Negative

$$TP\ rate = \frac{TP}{TP + FN}$$

$$FP\ rate = \frac{FP}{FP + TN}$$

=== Confusion Matrix ===

ALL as the positive class (Weka):

```

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

```

$$TP\ rate = \frac{44}{44 + 0} = 1.000$$

$$FP\ rate = \frac{4}{4 + 24} = 0.143$$

AML as the positive class (Derived):

```

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

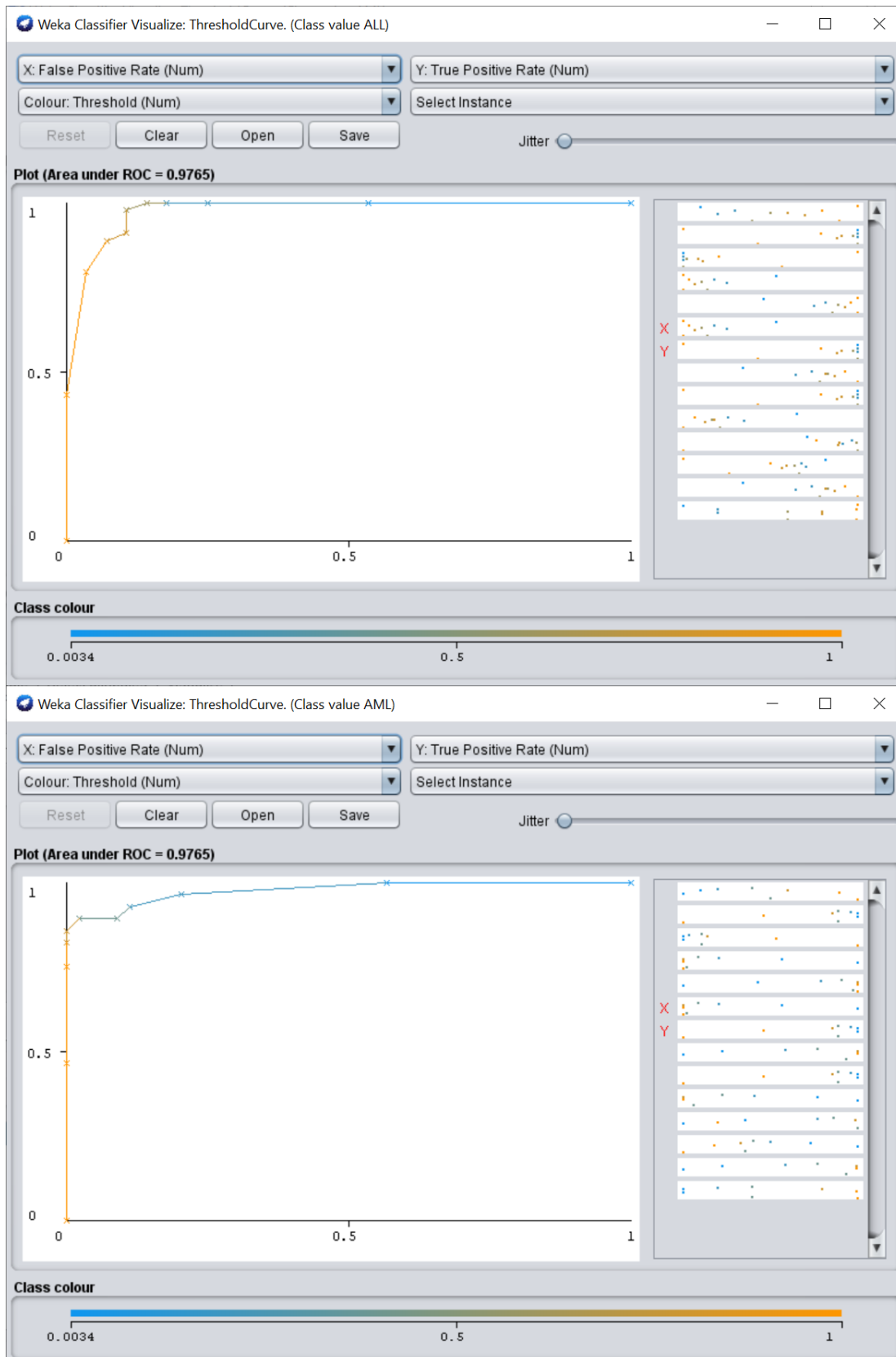
```

$$TP\ rate = \frac{24}{24 + 4} = 0.857$$

$$FP\ rate = \frac{0}{0 + 44} = 0.000$$

My calculated values match the Weka results.

KNN: Capture the ROC curves for ALL positive and AML positive.



ZeroR

Record % correctly classified and confusion matrix (ALL positive class). Derive the confusion matrix when AML is the positive class. Calculate the class-dependent TP and FP rates. Show your work and compare to Weka.

Correctly Classified Instances 44 61.1111 %

TP Rate	FP Rate	Class
1.000	1.000	ALL
0.000	0.000	AML

True Class	Predicted class	
	Yes	No
Yes	TP: True Positive	FN: False Negative
No	FP: False Positive	TN: True Negative

$$TP\ rate = \frac{TP}{TP + FN}$$

$$FP\ rate = \frac{FP}{FP + TN}$$

=== Confusion Matrix ===

ALL as the positive class (Weka):

```

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

```

$$TP\ rate = \frac{44}{44 + 0} = 1.000$$

$$FP\ rate = \frac{28}{28 + 0} = 1.000$$

AML as the positive class (Derived):

```

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

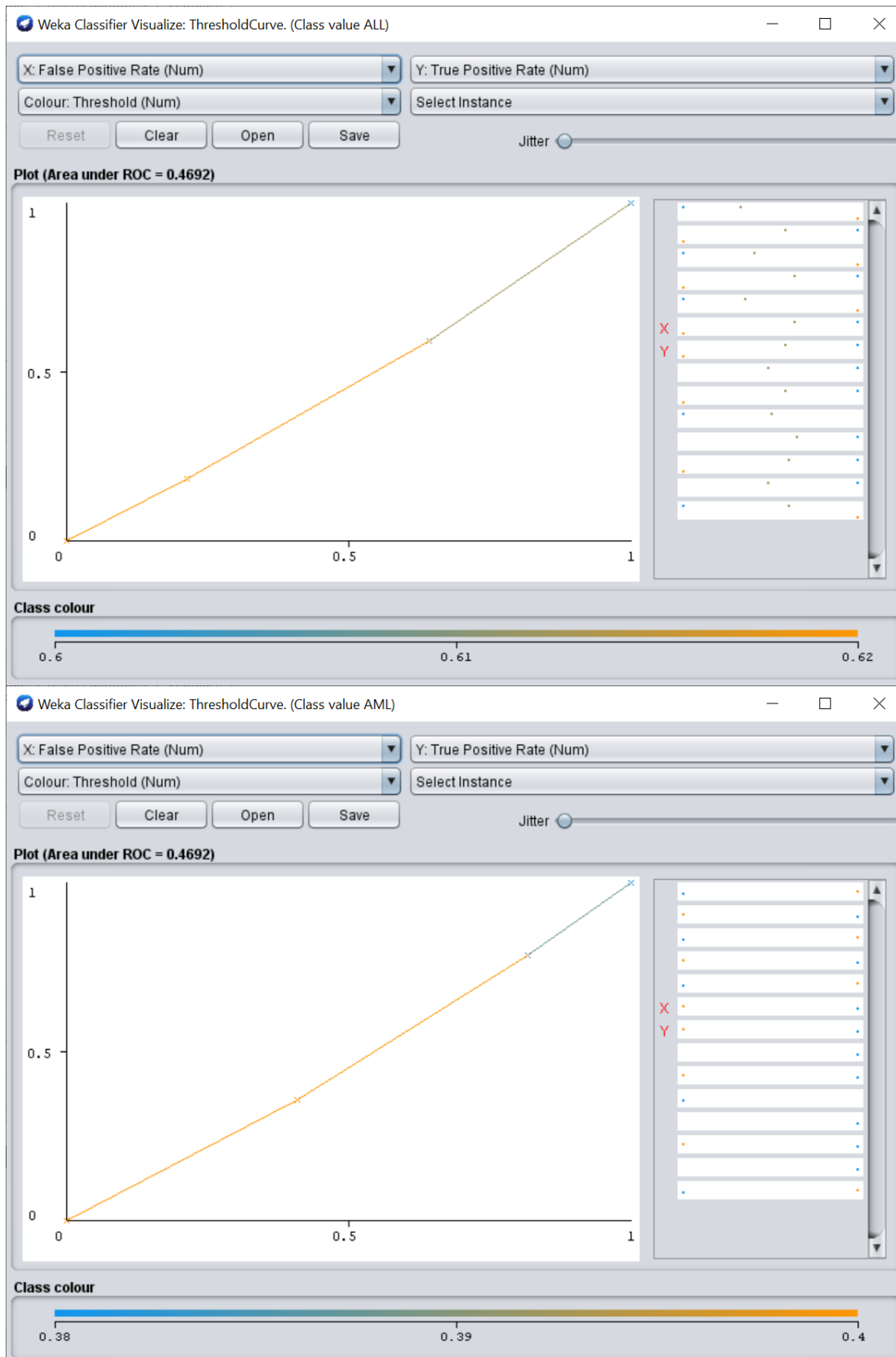
```

$$TP\ rate = \frac{0}{0 + 28} = 0.000$$

$$FP\ rate = \frac{0}{0 + 44} = 0.000$$

My calculated values match the Weka results.

ZeroR: Capture the ROC curves for ALL positive and AML positive.



KNN

=== 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
```

ZeroR

=== 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
```