

## Bagging Confusion Matrices

Generating Confusion Matrix for BAGGING for depth : 3 and with number of bags : 5

=== Confusion Matrix ===

TN: 993.0                  FP: 0.0 | Actual negatives :993.0

FN: 0.0                  TP: 638.0 | Actual positives :638.0

Predicted N: 993.0    Predicted P: 638.0

Generating Confusion Matrix for BAGGING for depth : 3 and with number of bags : 10

=== Confusion Matrix ===

TN: 966.0                  FP: 9.0 | Actual negatives :975.0

FN: 27.0                  TP: 629.0 | Actual positives :656.0

Predicted N: 993.0    Predicted P: 638.0

Generating Confusion Matrix for BAGGING for depth : 5 and with number of bags : 5

=== Confusion Matrix ===

TN: 993.0                  FP: 0.0 | Actual negatives :993.0

FN: 0.0                  TP: 638.0 | Actual positives :638.0

Predicted N: 993.0    Predicted P: 638.0

Generating Confusion Matrix for BAGGING for depth : 5 and with number of bags : 10

=== Confusion Matrix ===

TN: 993.0                  FP: 0.0 | Actual negatives :993.0

FN: 0.0                  TP: 638.0 | Actual positives :638.0

Predicted N: 993.0    Predicted P: 638.0

## Boosting Confusion Matrices

Generating Confusion Matrix for ADABOOST for depth : 1 and with number of tree : 5

=== Confusion Matrix ===

TN: 604.0                  FP: 34.0 | Actual negatives :638.0

FN: 163.0                  TP: 830.0 | Actual positives :993.0

Predicted N: 767.0    Predicted P: 864.0

Generating Confusion Matrix for ADABOOST for depth : 1 and with number of tree : 10

=== Confusion Matrix ===

TN: 604.0                  FP: 34.0 | Actual negatives :638.0

FN: 163.0                  TP: 830.0 | Actual positives :993.0

Predicted N: 767.0    Predicted P: 864.0

Generating Confusion Matrix for ADABOOST for depth : 2 and with number of tree : 5

=== Confusion Matrix ===

TN: 638.0                  FP: 0.0 | Actual negatives :638.0

FN: 50.0                  TP: 943.0 | Actual positives :993.0

Predicted N: 688.0    Predicted P: 943.0

Generating Confusion Matrix for ADABOOST for depth : 2 and with number of tree : 10

=== Confusion Matrix ===

TN: 638.0                  FP: 0.0 | Actual negatives :638.0

FN: 50.0                  TP: 943.0 | Actual positives :993.0

Predicted N: 688.0    Predicted P: 943.0

## WEKA Run Information for Bagging

=== Run information ===

Scheme: weka.classifiers.misc.InputMappedClassifier -I -trim -W weka.classifiers.meta.Bagging -- -P 100 -S 1 -num-slots 1 -I 10 -W weka.classifiers.trees.REPTree -- -M 2 -V 0.001 -N 3 -S 1 -L -1 -I 0.0

Relation: mushroom\_train

Instances: 6493

Attributes: 23

att1

att2

att3

att4

att5

att6

att7

att8

att9

att10

att11

att12

att13

att14

att15

att16

att17

att18

att19

att20

att21

att22

att23

Test mode: user supplied test set: size unknown (reading incrementally)

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

InputMappedClassifier:

Bagging with 10 iterations and base learner

weka.classifiers.trees.REPTree -M 2 -V 0.001 -N 3 -S 1 -L -1 -I 0.0

Time taken to build model: 0.72 seconds

=== Evaluation on test set ===

Time taken to test model on supplied test set: 0.02 seconds

=== Summary ===

Correctly Classified Instances	52	24.2991 %
Incorrectly Classified Instances	162	75.7009 %
Kappa statistic	-0.0793	
Mean absolute error	0.1156	
Root mean squared error	0.2549	
Relative absolute error	69.7044 %	
Root relative squared error	87.0033 %	
Total Number of Instances	214	

=== Detailed Accuracy By Class ===

TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
0.333	0.231	0.278	0.333	0.303	0.096	0.759	0.325	n

0.238	0.438	0.260	0.238	0.248	-0.204	0.553	0.381	w
0.045	0.052	0.091	0.045	0.061	-0.009	0.906	0.357	g
0.254	0.371	0.222	0.254	0.237	-0.113	0.589	0.305	y
0.000	0.000	0.000	0.000	0.000	0.000	?	?	e
0.000	0.000	0.000	0.000	0.000	0.000	?	?	p
0.000	0.000	0.000	0.000	0.000	0.000	?	?	b
0.000	0.000	0.000	0.000	0.000	0.000	?	?	c
0.000	0.000	0.000	0.000	0.000	0.000	?	?	r
0.000	0.000	0.000	0.000	0.000	0.000	?	?	u
Weighted Avg.	0.243	0.335	0.235	0.243	0.237	-0.094	0.643	0.344

=== Confusion Matrix ===

```

a b c d e f g h i j <-- classified as
15 12 7 11 0 0 0 0 0 0 | a = n
16 20 3 45 0 0 0 0 0 0 | b = w
15 6 1 0 0 0 0 0 0 0 | c = g
8 39 0 16 0 0 0 0 0 0 | d = y
0 0 0 0 0 0 0 0 0 0 | e = e
0 0 0 0 0 0 0 0 0 0 | f = p
0 0 0 0 0 0 0 0 0 0 | g = b
0 0 0 0 0 0 0 0 0 0 | h = c
0 0 0 0 0 0 0 0 0 0 | i = r
0 0 0 0 0 0 0 0 0 0 | j = u

```

## WEKA Run Information for ADABOOST

=== Run information ===

Scheme: weka.classifiers.misc.InputMappedClassifier -I -trim -W weka.classifiers.meta.AdaBoostM1 -- -P 100 -S 1 -I 10 -W weka.classifiers.trees.DecisionStump

Relation: mushroom\_train

Instances: 6493

Attributes: 23

att1

att2

att3

att4

att5

att6

att7

att8

att9

att10

att11

att12

att13

att14

att15

att16

att17

att18

att19

att20

att21

att22

att23

Test mode: user supplied test set: size unknown (reading incrementally)

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

InputMappedClassifier:

AdaBoostM1: No boosting possible, one classifier used!

Decision Stump

Classifications

att12 = b : g

att12 != b : w

att12 is missing : n

Class distributions

att12 = b

n	w	g	y	e	p	b	c	r	u
0.1674326986211425			0.06467498358502954			0.37130663164806305			0.17859487852921865
	0.15298752462245568			0.026920551543007223		0.030531845042678925			0.0075508864084044645
	0.0	0.0							

att12 != b

n	w	g	y	e	p	b	c	r	u
0.286774628879892			0.33873144399460187			0.16531713900134953			0.1970310391363023
	0.006072874493927126	0.0	0.0			0.006072874493927126	0.0		0.0

att12 is missing

n	w	g	y	e	p	b	c	r	u
0.4595419847328244			0.06055979643765903			0.05343511450381679			0.0055979643765903305
	0.36844783715012724		0.018829516539440202			0.020865139949109414	0.0		
	0.0061068702290076335	0.0066157760814249365							

Time taken to build model: 0.04 seconds

=== Evaluation on test set ===

Time taken to test model on supplied test set: 0.01 seconds

=== Summary ===

Correctly Classified Instances	74	34.5794 %
Incorrectly Classified Instances	140	65.4206 %
Kappa statistic	-0.0332	
Mean absolute error	0.1492	
Root mean squared error	0.2741	
Relative absolute error	89.9321 %	
Root relative squared error	93.5825 %	
Total Number of Instances	214	

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	0.000	0.000	0.000	0.000	0.000	0.000	0.542	0.225	n
	0.881	0.931	0.379	0.881	0.530	-0.086	0.475	0.381	w
	0.000	0.099	0.000	0.000	0.000	-0.106	0.451	0.103	g
	0.000	0.000	0.000	0.000	0.000	0.000	0.473	0.284	y
	0.000	0.000	0.000	0.000	0.000	0.000	?	?	e
	0.000	0.000	0.000	0.000	0.000	0.000	?	?	p
	0.000	0.000	0.000	0.000	0.000	0.000	?	?	b
	0.000	0.000	0.000	0.000	0.000	0.000	?	?	c
	0.000	0.000	0.000	0.000	0.000	0.000	?	?	r
	0.000	0.000	0.000	0.000	0.000	0.000	?	?	u
Weighted Avg.	0.346	0.376	0.149	0.346	0.208	-0.044	0.486	0.291	



=== Confusion Matrix ===

a b c d e f g h i j <-- classified as

0 44 1 0 0 0 0 0 0 0 | a = n

0 74 10 0 0 0 0 0 0 0 | b = w

0 22 0 0 0 0 0 0 0 0 | c = g

0 55 8 0 0 0 0 0 0 0 | d = y

0 0 0 0 0 0 0 0 0 0 | e = e

0 0 0 0 0 0 0 0 0 0 | f = p

0 0 0 0 0 0 0 0 0 0 | g = b

0 0 0 0 0 0 0 0 0 0 | h = c

0 0 0 0 0 0 0 0 0 0 | i = r

0 0 0 0 0 0 0 0 0 0 | j = u