

WEKA (10 DIFFERENT CLASSIFIERS/SETTINGS):

=== Classifier model 1 (full training set) ===

SMO

Kernel used:

RBF kernel: $K(x,y) = e^{-(0.01 * \langle x-y, x-y \rangle^2)}$

=== Summary ===

Correctly Classified Instances	197	98.5	%
Incorrectly Classified Instances	3	1.5	%
Kappa statistic	0.97		
Mean absolute error	0.015		
Root mean squared error	0.1225		
Relative absolute error	3	%	
Root relative squared error	24.4949	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

	ROC Area	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
		0.980	0.010	0.990	0.980	0.985	0.970
	0.985	0.980	-1				
		0.990	0.020	0.980	0.990	0.985	0.970
	0.985	0.975	1				
	Weighted Avg.	0.985	0.015	0.985	0.985	0.985	0.970
	0.985	0.978					

=== Confusion Matrix ===

```
a  b  <-- classified as
98  2 |  a = -1
1  99 |  b = 1
```

=== Classifier model 2 (full training set) ===

SMO

Kernel used:

Puk kernel

=== Summary ===

Correctly Classified Instances	195	97.5	%
Incorrectly Classified Instances	5	2.5	%
Kappa statistic	0.95		
Mean absolute error	0.025		

```

Root mean squared error          0.1581
Relative absolute error          5      %
Root relative squared error      31.6228 %
Total Number of Instances        200

```

=== Detailed Accuracy By Class ===

ROC Area	PRC Area	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
		Class					
		0.990	0.040	0.961	0.990	0.975	0.950
0.975	0.957	-1					
		0.960	0.010	0.990	0.960	0.975	0.950
0.975	0.970	1					
Weighted Avg.		0.975	0.025	0.975	0.975	0.975	0.950
0.975	0.963						

=== Confusion Matrix ===

```

a  b  <-- classified as
99  1 |  a = -1
 4 96 |  b = 1

```

=== Classifier model 3 (full training set) ===

SMO

Kernel used:

Normalized Poly Kernel: $K(x,y) = \langle x,y \rangle^{2.0} / (\langle x,x \rangle^{2.0} \langle y,y \rangle^{2.0})^{(1/2)}$

=== Summary ===

```

Correctly Classified Instances      194          97      %
Incorrectly Classified Instances     6           3      %
Kappa statistic                    0.94
Mean absolute error                 0.03
Root mean squared error             0.1732
Relative absolute error              6      %
Root relative squared error         34.641  %
Total Number of Instances          200

```

=== Detailed Accuracy By Class ===

ROC Area	PRC Area	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
		Class					
		0.960	0.020	0.980	0.960	0.970	0.940
0.970	0.960	-1					
		0.980	0.040	0.961	0.980	0.970	0.940
0.970	0.952	1					
Weighted Avg.		0.970	0.030	0.970	0.970	0.970	0.940
0.970	0.956						

=== Confusion Matrix ===

```
a  b  <-- classified as
96  4 |  a = -1
 2 98 |  b = 1
```

=== Classifier model 4 (full training set) ===

SMO

Kernel used:

Linear Kernel: $K(x,y) = \langle x,y \rangle$

=== Summary ===

Correctly Classified Instances	196	98	%
Incorrectly Classified Instances	4	2	%
Kappa statistic	0.96		
Mean absolute error	0.02		
Root mean squared error	0.1414		
Relative absolute error	4	%	
Root relative squared error	28.2843	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

		TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
ROC Area	PRC Area	Class					
		0.970	0.010	0.990	0.970	0.980	0.960
0.980	0.975	-1					
		0.990	0.030	0.971	0.990	0.980	0.960
0.980	0.966	1					
Weighted Avg.		0.980	0.020	0.980	0.980	0.980	0.960
0.980	0.970						

=== Confusion Matrix ===

```
a  b  <-- classified as
97  3 |  a = -1
 1 99 |  b = 1
```

=== Classifier model 5 (full training set) ===

Cross-validated Parameter selection.
 Classifier: weka.classifiers.functions.SMO
 Cross-validation Parameter: '-C' ranged from 2.0 to 8.0 with 4.0 steps

SMO

Kernel used:
 Linear Kernel: $K(x,y) = \langle x,y \rangle$

=== Summary ===

Correctly Classified Instances	196	98	%
Incorrectly Classified Instances	4	2	%
Kappa statistic	0.96		
Mean absolute error	0.02		
Root mean squared error	0.1414		
Relative absolute error	4	%	
Root relative squared error	28.2843	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

		TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
ROC Area	PRC Area	Class					
		0.970	0.010	0.990	0.970	0.980	0.960
0.980	0.975	-1					
		0.990	0.030	0.971	0.990	0.980	0.960
0.980	0.966	1					
Weighted Avg.		0.980	0.020	0.980	0.980	0.980	0.960
0.980	0.970						

=== Confusion Matrix ===

a	b	<-- classified as
97	3	a = -1
1	99	b = 1

=== Classifier model 6 (full training set) ===

Cross-validated Parameter selection.
 Classifier: weka.classifiers.functions.SMO
 Cross-validation Parameter: '-C' ranged from 2.0 to 8.0 with 4.0 steps

SMO

Kernel used:
 RBF kernel: $K(x,y) = e^{-(0.01 * \langle x-y, x-y \rangle^2)}$

=== Summary ===

Correctly Classified Instances	198	99	%
Incorrectly Classified Instances	2	1	%
Kappa statistic	0.98		
Mean absolute error	0.01		
Root mean squared error	0.1		
Relative absolute error	2	%	
Root relative squared error	20	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

ROC Area	PRC Area	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
		Class					
		0.990	0.010	0.990	0.990	0.990	0.980
0.990	0.985	-1					
		0.990	0.010	0.990	0.990	0.990	0.980
0.990	0.985	1					
Weighted Avg.		0.990	0.010	0.990	0.990	0.990	0.980
0.990	0.985						

=== Confusion Matrix ===

```

a  b  <-- classified as
99  1  |  a = -1
1  99 |  b = 1

```

=== Classifier model 7 (full training set) ===

Cross-validated Parameter selection.
Classifier: weka.classifiers.trees.J48
Cross-validation Parameter: '-C' ranged from 0.1 to 0.5 with 5.0 steps
Classifier Options: -C 0.1 -M 2

J48 pruned tree

```

P177 <= 0
|   P84 <= 0
|   |   P193 <= 0
|   |   |   P208 <= 0: 1 (49.0)
|   |   |   P208 > 0: -1 (3.0/1.0)
|   |   P193 > 0: -1 (3.0)
|   P84 > 0: -1 (4.0)
P177 > 0: -1 (41.0)

```

Number of Leaves : 5

Size of the tree : 9

=== Summary ===

Correctly Classified Instances	175	87.5	%
Incorrectly Classified Instances	25	12.5	%
Kappa statistic	0.75		
Mean absolute error	0.1283		
Root mean squared error	0.3551		
Relative absolute error	25.6667	%	
Root relative squared error	71.0243	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

ROC Area	PRC Area	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
		Class					
		0.880	0.130	0.871	0.880	0.876	0.750
0.874	0.824	-1					
		0.870	0.120	0.879	0.870	0.874	0.750
0.874	0.830	1					
Weighted Avg.		0.875	0.125	0.875	0.875	0.875	0.750
0.874	0.827						

=== Confusion Matrix ===

```

a  b  <-- classified as
88 12 |  a = -1
13 87 |  b = 1

```

=== Classifier model 8 (full training set) ===

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
```

=== Summary ===

Correctly Classified Instances	164	82	%
Incorrectly Classified Instances	36	18	%
Kappa statistic	0.64		
Mean absolute error	0.2246		
Root mean squared error	0.3428		
Relative absolute error	44.9118	%	
Root relative squared error	68.5626	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

ROC Area	PRC Area	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
		Class					
		0.710	0.070	0.910	0.710	0.798	0.656
0.932	0.892	-1					
		0.930	0.290	0.762	0.930	0.838	0.656
0.932	0.934	1					

Weighted Avg.	0.820	0.180	0.836	0.820	0.818	0.656
0.932	0.913					

=== Confusion Matrix ===

```

a  b  <-- classified as
71 29 |  a = -1
 7 93 |  b = 1

```

=== Classifier model 9 (full training set): WORKED 100% ===

Vote combines the probability distributions of these base learners:
 weka.classifiers.rules.ZeroR
 using the 'Average' combination rule

=== Summary ===

Correctly Classified Instances	100	50	%
Incorrectly Classified Instances	100	50	%
Kappa statistic	0		
Mean absolute error	0.5		
Root mean squared error	0.5		
Relative absolute error	100	%	
Root relative squared error	100	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

ROC Area	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
0.500	1.000	1.000	0.500	1.000	0.667	0.000
0.500	0.000	0.000	0.000	0.000	0.000	0.000
0.500	0.500	0.500	0.250	0.500	0.333	0.000

=== Confusion Matrix ===

```

a  b  <-- classified as
100 0 |  a = -1
100 0 |  b = 1

```

=== Classifier model 10 (full training set) ===

Classification via Regression

Classifier for class with index 0:

M5 pruned model tree:
(using smoothed linear models)

```
P177 <= 0.5 :
|   P231 <= 0.5 : LM1 (31/0%)
|   P231 >  0.5 :
|   |   P199 <= 0.5 : LM2 (11/49.237%)
|   |   P199 >  0.5 : LM3 (17/0%)
P177 >  0.5 : LM4 (41/0%)
```

=== Summary ===

Correctly Classified Instances	180	90	%
Incorrectly Classified Instances	20	10	%
Kappa statistic	0.8		
Mean absolute error	0.1437		
Root mean squared error	0.3006		
Relative absolute error	28.7447	%	
Root relative squared error	60.1121	%	
Total Number of Instances	200		

=== Detailed Accuracy By Class ===

		TP Rate	FP Rate	Precision	Recall	F-Measure	MCC
ROC Area	PRC Area	Class					
		0.920	0.120	0.885	0.920	0.902	0.801
0.945	0.940	-1					
		0.880	0.080	0.917	0.880	0.898	0.801
0.945	0.940	1					
Weighted Avg.		0.900	0.100	0.901	0.900	0.900	0.801
0.945	0.940						

=== Confusion Matrix ===

```
  a  b  <-- classified as
92  8 |  a = -1
12 88 |  b = 1
```