

Support Vector Machines (SVM) Classifier

=== Run information ===

Scheme: weka.classifiers.functions.SMO -C 1.0 -L 0.001 -P 1.0E-12 -N 0 -V -1 -W 1 -K

"weka.classifiers.functions.supportVector.PolyKernel -E 1.0 -C 250007" -calibrator

"weka.classifiers.functions.Logistic -R 1.0E-8 -M -1 -num-decimal-places 4"

Relation: nvmax 10

Instances: 132

Attributes: 21

they
work
funct
i
leisure
ppron
past
relig
conj
quant
incl
Dic
we
verb
social
body
time
achieve
home
friend
class

Test mode: evaluate on training data

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

SMO

Kernel used:

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

Classifier for classes: yes, no

BinarySMO

Machine linear: showing attribute weights, not support vectors.

1.5201 * (normalized) they
+ 1.9949 * (normalized) work
+ 1.4397 * (normalized) funct
+ -0.8577 * (normalized) i
+ -1.8934 * (normalized) leisure
+ -0.8513 * (normalized) ppron
+ -0.8254 * (normalized) past
+ -0.4646 * (normalized) relig
+ 0.8294 * (normalized) conj
+ 0.2203 * (normalized) quant
+ -0.2548 * (normalized) incl
+ 1.1833 * (normalized) Dic
+ 0.8698 * (normalized) we
+ 0.0298 * (normalized) verb
+ -0.1533 * (normalized) social
+ -1.4539 * (normalized) body
+ -1.0088 * (normalized) time
+ -0.4572 * (normalized) achieve
+ 1.2546 * (normalized) home
+ -0.5945 * (normalized) friend
- 0.9493

Number of kernel evaluations: 1972 (85.434% cached)

Time taken to build model: 0.07 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0.01 seconds

=== Summary ===

Correctly Classified Instances	107	81.0606 %
Incorrectly Classified Instances	25	18.9394 %
Kappa statistic	0.621	
Mean absolute error	0.1894	
Root mean squared error	0.4352	
Relative absolute error	37.9131 %	
Root relative squared error	87.0788 %	

Total Number of Instances 132

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area
Class								
	0.813	0.191	0.800	0.813	0.806	0.621	0.811	yes
	0.809	0.188	0.821	0.809	0.815	0.621	0.811	no
Weighted Avg.	0.811	0.189	0.811	0.811	0.811	0.621	0.811	0.752

=== Confusion Matrix ===

a b <-- classified as
52 12 | a = yes
13 55 | b = no

Random forest

=== Run information ===

Scheme: weka.classifiers.trees.RandomForest -P 100 -I 100 -num-slots 1 -K 0 -M 1.0 -V
0.001 -S 1

Relation: nvmax 10

Instances: 132

Attributes: 21

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Test mode: evaluate on training data

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

RandomForest

Bagging with 100 iterations and base learner

weka.classifiers.trees.RandomTree -K 0 -M 1.0 -V 0.001 -S 1 -do-not-check-capabilities

Time taken to build model: 0.18 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0.02 seconds

=== Summary ===

Correctly Classified Instances	132	100	%
Incorrectly Classified Instances	0	0	%
Kappa statistic	1		
Mean absolute error	0.1112		
Root mean squared error	0.138		
Relative absolute error	22.2626 %		
Root relative squared error	27.6082 %		
Total Number of Instances	132		

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area
Class								
1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	yes
1.000	1.000	0.000	1.000	1.000	1.000	1.000	1.000	no
Weighted Avg.	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000

=== Confusion Matrix ===

a b <-- classified as
64 0 | a = yes
0 68 | b = no

J48

=== Run information ===

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

Relation: nvmax 10

Instances: 132

Attributes: 21

they
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class

Test mode: evaluate on training data

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

J48 pruned tree

they <= 0.06

| home <= 0.39: yes (26.0)

| home > 0.39

| | leisure <= 0.82: no (2.0)

| | leisure > 0.82: yes (3.0)

they > 0.06

| leisure <= 1.06

| | social <= 9.08: no (55.0/4.0)

```

| | social > 9.08: yes (3.0)
| | leisure > 1.06
| | ppron <= 6.04
| | | home <= 0.1: yes (5.0)
| | | home > 0.1
| | | | they <= 0.49
| | | | | work <= 1.86
| | | | | | work <= 1.09
| | | | | | | funct <= 24.85: yes (2.0)
| | | | | | | funct > 24.85: no (7.0)
| | | | | | | work > 1.09: yes (6.0/1.0)
| | | | | | | work > 1.86: no (7.0)
| | | | | they > 0.49: yes (3.0)
| | ppron > 6.04: yes (13.0)

```

Number of Leaves : 12

Size of the tree : 23

Time taken to build model: 0.14 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0.01 seconds

=== Summary ===

Correctly Classified Instances	127	96.2121 %
Incorrectly Classified Instances	5	3.7879 %
Kappa statistic	0.9241	
Mean absolute error	0.0688	
Root mean squared error	0.1855	
Relative absolute error	13.7774 %	
Root relative squared error	37.1182 %	
Total Number of Instances	132	

=== Detailed Accuracy By Class ===

Class	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area
yes	0.938	0.015	0.984	0.938	0.960	0.925	0.971	yes
no	0.985	0.063	0.944	0.985	0.964	0.925	0.956	no

Weighted Avg. 0.962 0.039 0.963 0.962 0.962 0.925 0.975 0.963

=== Confusion Matrix ===

```
a b <-- classified as
60 4 | a = yes
1 67 | b = no
```

IBK(k-NN)

=== Run information ===

Scheme: weka.classifiers.lazy.IBk -K 1 -W 0 -A

"weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: nvmax 10

Instances: 132

Attributes: 21

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Test mode: evaluate on training data

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

IB1 instance-based classifier

using 1 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0.05 seconds

=== Summary ===

Correctly Classified Instances	132	100	%
Incorrectly Classified Instances	0	0	%
Kappa statistic	1		
Mean absolute error	0.0075		
Root mean squared error	0.0075		
Relative absolute error	1.4939	%	
Root relative squared error	1.4932	%	
Total Number of Instances	132		

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area
Class								
	1.000	0.000	1.000	1.000	1.000	1.000	1.000	yes
	1.000	0.000	1.000	1.000	1.000	1.000	1.000	no
Weighted Avg.	1.000	0.000	1.000	1.000	1.000	1.000	1.000	1.000

=== Confusion Matrix ===

```
a b <-- classified as
64 0 | a = yes
0 68 | b = no
```

Naive Bayes

=== Run information ===

Scheme: weka.classifiers.bayes.NaiveBayes
Relation: nvmax 10
Instances: 132
Attributes: 21
they
work

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 friend
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Test mode: evaluate on training data

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

Naive Bayes Classifier

	Class	
Attribute	yes	no
	(0.49)	(0.51)
=====		
they		
mean	0.2144	0.4344
std. dev.	0.2351	0.2584
weight sum	64	68
precision	0.0202	0.0202
work		
mean	1.0686	2.0744
std. dev.	0.8444	1.1399
weight sum	64	68
precision	0.0594	0.0594
funct		
mean	25.5627	31.5872

std. dev.	12.5235	5.1282
weight sum	64	68
precision	0.4231	0.4231

i

mean	3.0648	1.7657
std. dev.	2.9613	1.2022
weight sum	64	68
precision	0.1239	0.1239

leisure

mean	1.294	0.9202
std. dev.	0.9348	0.6153
weight sum	64	68
precision	0.0389	0.0389

ppron

mean	5.326	4.683
std. dev.	3.3515	1.7099
weight sum	64	68
precision	0.1126	0.1126

past

mean	1.4527	1.3958
std. dev.	1.217	0.5818
weight sum	64	68
precision	0.0776	0.0776

relig

mean	0.3043	0.2609
std. dev.	0.4292	0.2334
weight sum	64	68
precision	0.0361	0.0361

conj

mean	2.2152	2.9286
std. dev.	1.7622	0.6879
weight sum	64	68
precision	0.106	0.106

quant

mean	1.2628	1.5522
std. dev.	1.0058	0.4317

weight sum	64	68
precision	0.0535	0.0535

incl

mean	2.1087	2.6221
std. dev.	1.8675	0.9428
weight sum	64	68
precision	0.129	0.129

Dic

mean	44.5399	52.5317
std. dev.	19.3697	6.4169
weight sum	64	68
precision	0.6079	0.6079

we

mean	0.4671	0.9162
std. dev.	0.6472	0.6427
weight sum	64	68
precision	0.0502	0.0502

verb

mean	7.2476	7.9213
std. dev.	4.2659	1.8346
weight sum	64	68
precision	0.1464	0.1464

social

mean	5.0163	6.1134
std. dev.	3.2726	1.3727
weight sum	64	68
precision	0.1172	0.1172

body

mean	0.3872	0.275
std. dev.	0.4658	0.1934
weight sum	64	68
precision	0.0419	0.0419

time

mean	4.0872	3.477
std. dev.	2.3734	1.0252
weight sum	64	68

```
precision    0.1283  0.1283
```

achieve

```
mean      1.2434 1.5034
```

std. dev. 1.2343 0.6893

weight sum	64	68
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```
precision    0.0874  0.0874
```

home

```
mean      0.1851  0.3316
```

std. dev. 0.2404 0.3373

weight sum	64	68
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```
precision    0.0382  0.0382
```

friend

```
mean      0.1421 0.1191
```

std. dev. 0.2243 0.1229

weight sum	64	68
------------	----	----

```
precision    0.0357  0.0357
```

Time taken to build model: 0.01 seconds

=== Evaluation on training set ===

Time taken to test model on training data: 0.04 seconds

=== Summary ===

Correctly Classified Instances	104	78.7879 %
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Incorrectly Classified Instances	28	21.2121 %
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Kappa statistic 0.5722

Mean absolute error	0.2213
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Root mean squared error	0.4499
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Relative absolute error 44.2988 %

Root relative squared error	90.027 %
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Total Number of Instances	132
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=== Detailed Accuracy By Class ===

Class	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area
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	0.656	0.088	0.875	0.656	0.750	0.590	0.869	0.886	yes
	0.912	0.344	0.738	0.912	0.816	0.590	0.869	0.863	no
Weighted Avg.	0.788	0.220	0.804	0.788	0.784	0.590	0.869	0.874	

=== Confusion Matrix ===

a b <-- classified as

42 22 | a = yes

6 62 | b = no