```
optimization finished, #iter = 13
obj = -0.7480570630670444, rho = -1.4528444969775751
nSV = 3, nBSV = 0
optimization finished, #iter = 3
obj = -0.20368398537213225, rho = -1.5077131251781049
nSV = 3, nBSV = 0
optimization finished, #iter = 31
nu = 0.2048652377284185
obj = -15.759854002109215, rho = -6.780971185110271
nSV = 23, nBSV = 19
Total nSV = 27
optimization finished, #iter = 5
obj = -0.7480570720813526, rho = 1.4474641523659868
nSV = 3, nBSV = 0
optimization finished, #iter = 44
nu = 0.2
obj = -13.134060390542222, rho = -6.533781206321159
nSV = 20, nBSV = 17
optimization finished, #iter = 3
obj = -0.2036840100650599, rho = -1.507301292741689
nSV = 3, nBSV = 0
Total nSV = 24
optimization finished, #iter = 4
obj = -0.7434937490072309, rho = 0.9033453446896207
nSV = 2, nBSV = 0
optimization finished, #iter = 50
nu = 0.22607585007981232
obj = -15.420071870290005, rho = -6.266429096666971
nSV = 23, nBSV = 19
optimization finished, #iter = 7
obj = -0.20368396588291823, rho = -1.5067116625951638
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 13
obj = -0.7480571473590875, rho = -1.4522209420314869
nSV = 3, nBSV = 0
optimization finished, #iter = 5
obj = -0.2036839834609859, rho = -1.5068336735901735
nSV = 3, nBSV = 0
optimization finished, #iter = 33
nu = 0.227647575327962
```

```
obj = -15.75985563358741, rho = -6.781304813108298
nSV = 23, nBSV = 19
Total nSV = 27
optimization finished, #iter = 71
nu = 0.21731795447725427
obj = -14.861530553253262, rho = -6.554949003093664
nSV = 22, nBSV = 17
optimization finished, #iter = 6
obj = -0.74805707207787, rho = 1.4474641206095384
nSV = 3, nBSV = 0
optimization finished, #iter = 10
obj = -0.20368396691237817, rho = 1.5078574826980926
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 3
obj = -0.7480570721039987, rho = 1.4474643588132423
nSV = 3, nBSV = 0
optimization finished, #iter = 63
nu = 0.21649775160786172
obj = -14.854288384109482, rho = -6.565383554967919
nSV = 22, nBSV = 18
optimization finished, #iter = 5
obj = -0.20368400609424198, rho = -1.5070906849859806
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 5
obj = -0.20368398592404816, rho = -1.5068122903256456
nSV = 3, nBSV = 0
optimization finished, #iter = 16
obj = -0.7480570660058891, rho = -1.4500184113326846
nSV = 3, nBSV = 0
optimization finished, #iter = 53
nu = 0.20368257548849017
obi = -13.891319886673601, rho = 7.013561442720593
nSV = 20, nBSV = 17
Total nSV = 24
optimization finished, #iter = 33
nu = 0.21540568276955507
obj = -14.786286104705216, rho = 9.940617715210074
nSV = 22, nBSV = 18
optimization finished, #iter = 3
obj = -0.1692047421012851, rho = 2.289339954081631
```

```
nSV = 2, nBSV = 0
optimization finished, #iter = 5
obj = -0.7480570720767622, rho = 1.4474641105057267
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 10
obj = -0.7005770006078433, rho = -2.3255269694303498
nSV = 3, nBSV = 0
optimization finished, #iter = 3
obj = -0.2034587616943925, rho = -1.5412003278035749
nSV = 2, nBSV = 0
optimization finished, #iter = 58
nu = 0.20071595625302163
obj = -13.845074368390987, rho = -8.610210087936132
nSV = 21. nBSV = 16
Total nSV = 24
optimization finished, #iter = 42
nu = 0.19546960229647226
obj = -12.914513648850424, rho = 6.286935857272965
nSV = 21, nBSV = 16
optimization finished, #iter = 10
obj = -0.20368396691237817, rho = 1.5078574826980926
nSV = 3, nBSV = 0
optimization finished, #iter = 11
obj = -0.5655476662438315, rho = 1.3833740930352878
nSV = 4, nBSV = 0
Total nSV = 25
optimization finished, #iter = 15
obj = -0.7480570630682857, rho = -1.4528444890359047
nSV = 3, nBSV = 0
optimization finished, #iter = 7
obj = -0.20368254394665553, rho = -1.5107311932937588
nSV = 3, nBSV = 0
optimization finished, #iter = 29
nu = 0.22477296925798498
obj = -15.686300374927114, rho = -7.389059968600036
nSV = 22. nBSV = 19
Total nSV = 26
Options: -S 0 -K 0 -D 3 -G 0.0 -R 0.0 -N 0.5 -M 40 -C 1.0 -E 0.001 -P 0.1 -W 2.0 -seed 1
LibSVM wrapper, original code by Yasser EL-Manzalawy (= WLSVM)
```

```
Time taken to build model: 0.02 seconds
```

Time taken to test model on training data: 0.01 seconds

=== Error on training data ===

Correctly Classified Instances 149 99.3333 % Incorrectly Classified Instances 0.6667 % 1 Kappa statistic 0.99 Mean absolute error 0.0044 Root mean squared error 0.0667 Relative absolute error % Root relative squared error 14.1421 % Total Number of Instances 150

=== Confusion Matrix ===

a b c <-- classified as 50 0 0 | a = Iris-setosa 0 49 1 | b = Iris-versicolor 0 0 50 | c = Iris-virginica

=== Stratified cross-validation ===

Correctly Classified Instances 145 96.6667 % Incorrectly Classified Instances 3.3333 % 5 Kappa statistic 0.95 Mean absolute error 0.0222 Root mean squared error 0.1491 Relative absolute error % 5 Root relative squared error 31.6228 % Total Number of Instances 150

=== Confusion Matrix ===

a b c <-- classified as
50 0 0 | a = Iris-setosa
0 47 3 | b = Iris-versicolor
0 2 48 | c = Iris-virginica

*
optimization finished, #iter = 13
obj = -0.7480570630670444, rho = -1.4528444969775751
nSV = 3, nBSV = 0

*
optimization finished, #iter = 3
obj = -0.20368398537213225, rho = -1.5077131251781049

optimization finished, #iter = 31

nSV = 3, nBSV = 0

```
nu = 0.2048652377284185
obj = -15.759854002109215, rho = -6.780971185110271
nSV = 23, nBSV = 19
Total nSV = 27
optimization finished, #iter = 5
obj = -0.7480570720813526, rho = 1.4474641523659868
nSV = 3, nBSV = 0
optimization finished, #iter = 44
nu = 0.2
obj = -13.134060390542222, rho = -6.533781206321159
nSV = 20, nBSV = 17
optimization finished, #iter = 3
obj = -0.2036840100650599, rho = -1.507301292741689
nSV = 3, nBSV = 0
Total nSV = 24
optimization finished, #iter = 4
obj = -0.7434937490072309, rho = 0.9033453446896207
nSV = 2, nBSV = 0
optimization finished, #iter = 50
nu = 0.22607585007981232
obj = -15.420071870290005, rho = -6.266429096666971
nSV = 23, nBSV = 19
optimization finished, #iter = 7
obj = -0.20368396588291823, rho = -1.5067116625951638
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 13
obj = -0.7480571473590875, rho = -1.4522209420314869
nSV = 3, nBSV = 0
optimization finished, #iter = 5
obj = -0.2036839834609859, rho = -1.5068336735901735
nSV = 3, nBSV = 0
optimization finished, #iter = 33
nu = 0.227647575327962
obj = -15.75985563358741, rho = -6.781304813108298
nSV = 23, nBSV = 19
Total nSV = 27
optimization finished, #iter = 71
nu = 0.21731795447725427
obj = -14.861530553253262, rho = -6.554949003093664
nSV = 22, nBSV = 17
optimization finished, #iter = 6
```

```
obj = -0.74805707207787, rho = 1.4474641206095384
nSV = 3, nBSV = 0
optimization finished, #iter = 10
obj = -0.20368396691237817, rho = 1.5078574826980926
nSV = 3. nBSV = 0
Total nSV = 26
optimization finished, #iter = 3
obj = -0.7480570721039987, rho = 1.4474643588132423
nSV = 3, nBSV = 0
optimization finished, #iter = 63
nu = 0.21649775160786172
obj = -14.854288384109482, rho = -6.565383554967919
nSV = 22, nBSV = 18
optimization finished, #iter = 5
obj = -0.20368400609424198, rho = -1.5070906849859806
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 5
obj = -0.20368398592404816, rho = -1.5068122903256456
nSV = 3, nBSV = 0
optimization finished, #iter = 16
obj = -0.7480570660058891, rho = -1.4500184113326846
nSV = 3, nBSV = 0
optimization finished, #iter = 53
nu = 0.20368257548849017
obj = -13.891319886673601, rho = 7.013561442720593
nSV = 20, nBSV = 17
Total nSV = 24
optimization finished, #iter = 33
nu = 0.21540568276955507
obj = -14.786286104705216, rho = 9.940617715210074
nSV = 22, nBSV = 18
optimization finished, #iter = 3
obj = -0.1692047421012851, rho = 2.289339954081631
nSV = 2, nBSV = 0
optimization finished, #iter = 5
obj = -0.7480570720767622, rho = 1.4474641105057267
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 10
obj = -0.7005770006078433, rho = -2.3255269694303498
nSV = 3, nBSV = 0
```

```
optimization finished, #iter = 3
obj = -0.2034587616943925, rho = -1.5412003278035749
nSV = 2, nBSV = 0
optimization finished, #iter = 58
nu = 0.20071595625302163
obj = -13.845074368390987, rho = -8.610210087936132
nSV = 21, nBSV = 16
Total nSV = 24
optimization finished, #iter = 42
nu = 0.19546960229647226
obj = -12.914513648850424, rho = 6.286935857272965
nSV = 21, nBSV = 16
optimization finished, #iter = 10
obj = -0.20368396691237817, rho = 1.5078574826980926
nSV = 3, nBSV = 0
optimization finished, #iter = 11
obj = -0.5655476662438315, rho = 1.3833740930352878
nSV = 4, nBSV = 0
Total nSV = 25
optimization finished, #iter = 15
obj = -0.7480570630682857, rho = -1.4528444890359047
nSV = 3, nBSV = 0
optimization finished, #iter = 7
obj = -0.20368254394665553, rho = -1.5107311932937588
nSV = 3, nBSV = 0
optimization finished, #iter = 29
nu = 0.22477296925798498
obj = -15.686300374927114, rho = -7.389059968600036
nSV = 22, nBSV = 19
Total nSV = 26
Options: -S 0 -K 0 -D 3 -G 0.0 -R 0.0 -N 0.5 -M 40 -C 1.0 -E 0.001 -P 0.1 -W 2.0 -seed 1
LibSVM wrapper, original code by Yasser EL-Manzalawy (= WLSVM)
Time taken to build model: 0.02 seconds
Time taken to test model on training data: 0.01 seconds
=== Error on training data ===
Correctly Classified Instances
                                 149
                                              99.3333 %
Incorrectly Classified Instances
                                   1
                                             0.6667 %
Kappa statistic
                             0.99
Mean absolute error
                                0.0044
```

0.0667

Root mean squared error

```
%
Relative absolute error
Root relative squared error
                                  14.1421 %
Total Number of Instances
                                  150
=== Confusion Matrix ===
 a b c <-- classified as
50 0 0 | a = Iris-setosa
 0 49 1 | b = Iris-versicolor
 0 \ 0 \ 50 \mid c = Iris-virginica
=== Stratified cross-validation ===
Correctly Classified Instances
                                   145
                                               96.6667 %
Incorrectly Classified Instances
                                               3.3333 %
                                    5
Kappa statistic
                              0.95
Mean absolute error
                                 0.0222
Root mean squared error
                                    0.1491
Relative absolute error
                                 5
                                      %
                                  31.6228 %
Root relative squared error
Total Number of Instances
                                  150
=== Confusion Matrix ===
 a b c <-- classified as
50 0 0 | a = Iris-setosa
 0 47 3 | b = Iris-versicolor
 0 2 48 | c = Iris-virginica
optimization finished, #iter = 13
obj = -0.7480570630670444, rho = -1.4528444969775751
nSV = 3, nBSV = 0
optimization finished, #iter = 3
obj = -0.20368398537213225, rho = -1.5077131251781049
nSV = 3, nBSV = 0
optimization finished, #iter = 31
nu = 0.2048652377284185
obj = -15.759854002109215, rho = -6.780971185110271
nSV = 23, nBSV = 19
Total nSV = 27
optimization finished, #iter = 5
obj = -0.7480570720813526, rho = 1.4474641523659868
nSV = 3, nBSV = 0
optimization finished, #iter = 44
```

```
nu = 0.2
obi = -13.134060390542222, rho = -6.533781206321159
nSV = 20, nBSV = 17
optimization finished, #iter = 3
obj = -0.2036840100650599, rho = -1.507301292741689
nSV = 3. nBSV = 0
Total nSV = 24
optimization finished, #iter = 4
obj = -0.7434937490072309, rho = 0.9033453446896207
nSV = 2, nBSV = 0
optimization finished, #iter = 50
nu = 0.22607585007981232
obj = -15.420071870290005, rho = -6.266429096666971
nSV = 23, nBSV = 19
optimization finished, #iter = 7
obj = -0.20368396588291823, rho = -1.5067116625951638
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 13
obj = -0.7480571473590875, rho = -1.4522209420314869
nSV = 3. nBSV = 0
optimization finished, #iter = 5
obj = -0.2036839834609859, rho = -1.5068336735901735
nSV = 3, nBSV = 0
optimization finished, #iter = 33
nu = 0.227647575327962
obj = -15.75985563358741, rho = -6.781304813108298
nSV = 23, nBSV = 19
Total nSV = 27
optimization finished, #iter = 71
nu = 0.21731795447725427
obj = -14.861530553253262, rho = -6.554949003093664
nSV = 22, nBSV = 17
optimization finished, #iter = 6
obj = -0.74805707207787, rho = 1.4474641206095384
nSV = 3, nBSV = 0
optimization finished, #iter = 10
obj = -0.20368396691237817, rho = 1.5078574826980926
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 3
obj = -0.7480570721039987, rho = 1.4474643588132423
```

```
nSV = 3, nBSV = 0
optimization finished, #iter = 63
nu = 0.21649775160786172
obj = -14.854288384109482, rho = -6.565383554967919
nSV = 22, nBSV = 18
optimization finished, #iter = 5
obj = -0.20368400609424198, rho = -1.5070906849859806
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 5
obj = -0.20368398592404816, rho = -1.5068122903256456
nSV = 3, nBSV = 0
optimization finished, #iter = 16
obj = -0.7480570660058891, rho = -1.4500184113326846
nSV = 3, nBSV = 0
optimization finished, #iter = 53
nu = 0.20368257548849017
obi = -13.891319886673601, rho = 7.013561442720593
nSV = 20, nBSV = 17
Total nSV = 24
optimization finished, #iter = 33
nu = 0.21540568276955507
obj = -14.786286104705216, rho = 9.940617715210074
nSV = 22, nBSV = 18
optimization finished, #iter = 3
obj = -0.1692047421012851, rho = 2.289339954081631
nSV = 2, nBSV = 0
optimization finished, #iter = 5
obj = -0.7480570720767622, rho = 1.4474641105057267
nSV = 3, nBSV = 0
Total nSV = 26
optimization finished, #iter = 10
obj = -0.7005770006078433, rho = -2.3255269694303498
nSV = 3, nBSV = 0
optimization finished, #iter = 3
obj = -0.2034587616943925, rho = -1.5412003278035749
nSV = 2, nBSV = 0
optimization finished, #iter = 58
nu = 0.20071595625302163
obj = -13.845074368390987, rho = -8.610210087936132
nSV = 21, nBSV = 16
Total nSV = 24
```

```
optimization finished, #iter = 42
nu = 0.19546960229647226
obj = -12.914513648850424, rho = 6.286935857272965
nSV = 21, nBSV = 16
optimization finished, #iter = 10
obj = -0.20368396691237817, rho = 1.5078574826980926
nSV = 3, nBSV = 0
optimization finished, #iter = 11
obj = -0.5655476662438315, rho = 1.3833740930352878
nSV = 4, nBSV = 0
Total nSV = 25
optimization finished, #iter = 15
obj = -0.7480570630682857, rho = -1.4528444890359047
nSV = 3, nBSV = 0
optimization finished, #iter = 7
obj = -0.20368254394665553, rho = -1.5107311932937588
nSV = 3, nBSV = 0
optimization finished, #iter = 29
nu = 0.22477296925798498
obj = -15.686300374927114, rho = -7.389059968600036
nSV = 22, nBSV = 19
Total nSV = 26
Options: -S 0 -K 0 -D 3 -G 0.0 -R 0.0 -N 0.5 -M 40 -C 1.0 -E 0.001 -P 0.1 -W 2.0 -seed 1
LibSVM wrapper, original code by Yasser EL-Manzalawy (= WLSVM)
Time taken to build model: 0.02 seconds
Time taken to test model on training data: 0.01 seconds
=== Error on training data ===
Correctly Classified Instances
                                  149
                                              99.3333 %
Incorrectly Classified Instances
                                   1
                                              0.6667 %
Kappa statistic
                             0.99
                                0.0044
Mean absolute error
Root mean squared error
                                   0.0667
Relative absolute error
                                    %
                                 14.1421 %
Root relative squared error
Total Number of Instances
                                 150
=== Confusion Matrix ===
 a b c <-- classified as
50 0 0 | a = Iris-setosa
```

0 49 1 | b = Iris-versicolor

0 0 50 | c = Iris-virginica

=== Stratified cross-validation ===

Correctly Classified Instances 96.6667 % 145 Incorrectly Classified Instances 5 3.3333 % Kappa statistic 0.95 Mean absolute error 0.0222 Root mean squared error 0.1491 Relative absolute error % Root relative squared error 31.6228 % Total Number of Instances 150

=== Confusion Matrix ===

a b c <-- classified as 50 0 0 | a = Iris-setosa 0 47 3 | b = Iris-versicolor 0 2 48 | c = Iris-virginica