



## Ejercicio de Laboratorio II. Clasificadores 1-NN y K-NN

DataSet	K = 5			
	Clasificador 1-NN		Clasificador K-NN	
	Hold Out 70/30	10-Fold-Cross-Validation	Hold Out 70/30	10-Fold-Cross-Validation
IRIS	95.5556 %	95.3333 %	97.7778 %	95.3333 %
WINE	96.2264 %	94.9438 %	98.1132 %	95.5056 %
BREAST CANCER WISCONSIN	95.9064 %	96.1336 %	95.3216 %	97.188 %



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## Clasificador 1-NN

### Hold-out 70/30

#### IRIS

```
=== 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 test split ===

Time taken to test model on test split: 0 seconds

=== Summary ===

Correctly Classified Instances      43           95.5556 %
Incorrectly Classified Instances     2           4.4444 %
Kappa statistic                     0.9331
Mean absolute error                  0.0409
Root mean squared error              0.1702
Relative absolute error              9.1927 %
Root relative squared error          36.0807 %
Total Number of Instances           45
```

#### Matriz de Confusión

$$\begin{bmatrix} 14 & 0 & 0 \\ 0 & 16 & 0 \\ 0 & 2 & 13 \end{bmatrix}$$



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## WINE

```
=== 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 test split ===

Time taken to test model on test split: 0 seconds

=== Summary ===

Correctly Classified Instances      51           96.2264 %
Incorrectly Classified Instances    2            3.7736 %
Kappa statistic                    0.9431
Mean absolute error                 0.035
Root mean squared error             0.1571
Relative absolute error             7.8225 %
Root relative squared error        32.661 %
Total Number of Instances          53
```

## Matriz de Confusión

$$\begin{bmatrix} 19 & 0 & 0 \\ 1 & 14 & 1 \\ 0 & 0 & 18 \end{bmatrix}$$



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### Breast Cancer Wisconsin

```
=== 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 test split ===

Time taken to test model on test split: 0.01 seconds

=== Summary ===

Correctly Classified Instances      164      95.9064 %
Incorrectly Classified Instances     7       4.0936 %
Kappa statistic                     0.9124
Mean absolute error                  0.0432
Root mean squared error              0.2018
Relative absolute error              9.221 %
Root relative squared error          41.5708 %
Total Number of Instances           171
```

### Matriz de Confusión

$$\begin{bmatrix} 60 & 5 \\ 2 & 104 \end{bmatrix}$$



## 10-Fold-Cross-Validation

### IRIS

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

IB1 instance-based classifier
using 1 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances      143           95.3333 %
Incorrectly Classified Instances     7            4.6667 %
Kappa statistic                     0.93
Mean absolute error                  0.0399
Root mean squared error              0.1747
Relative absolute error              8.9763 %
Root relative squared error          37.0695 %
Total Number of Instances           150
```

### Matriz de Confusión

$$\begin{bmatrix} 50 & 0 & 0 \\ 0 & 47 & 3 \\ 0 & 4 & 46 \end{bmatrix}$$



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## WINE

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

IB1 instance-based classifier
using 1 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances      169           94.9438 %
Incorrectly Classified Instances     9            5.0562 %
Kappa statistic                     0.9238
Mean absolute error                  0.0413
Root mean squared error              0.1821
Relative absolute error              9.3973 %
Root relative squared error         38.8682 %
Total Number of Instances           178
```

## Matriz de Confusión

$$\begin{bmatrix} 59 & 0 & 0 \\ 5 & 62 & 4 \\ 0 & 0 & 48 \end{bmatrix}$$



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### Breast Cancer Wisconsin

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

IB1 instance-based classifier
using 1 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances      547      96.1336 %
Incorrectly Classified Instances    22      3.8664 %
Kappa statistic                    0.9171
Mean absolute error                 0.0405
Root mean squared error             0.1963
Relative absolute error              8.6513 %
Root relative squared error         40.591 %
Total Number of Instances          569
```

### Matriz de Confusión

$$\begin{bmatrix} 200 & 12 \\ 10 & 347 \end{bmatrix}$$



## Clasificador K-NN (K=5)

### Hold-out 70/30

#### IRIS

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

IB1 instance-based classifier
using 5 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Evaluation on test split ===

Time taken to test model on test split: 0 seconds

=== Summary ===

Correctly Classified Instances      44           97.7778 %
Incorrectly Classified Instances    1           2.2222 %
Kappa statistic                    0.9666
Mean absolute error                 0.0261
Root mean squared error             0.0975
Relative absolute error             5.8676 %
Root relative squared error        20.6771 %
Total Number of Instances          45
```

#### Matriz de Confusión

$$\begin{bmatrix} 14 & 0 & 0 \\ 0 & 16 & 0 \\ 0 & 1 & 14 \end{bmatrix}$$





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## WINE

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

IB1 instance-based classifier
using 5 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Evaluation on test split ===

Time taken to test model on test split: 0 seconds

=== Summary ===

Correctly Classified Instances      52           98.1132 %
Incorrectly Classified Instances    1           1.8868 %
Kappa statistic                    0.9716
Mean absolute error                 0.0297
Root mean squared error             0.098
Relative absolute error              6.6328 %
Root relative squared error         20.3717 %
Total Number of Instances          53
```

## Matriz de Confusión

$$\begin{bmatrix} 19 & 0 & 0 \\ 0 & 15 & 1 \\ 0 & 0 & 18 \end{bmatrix}$$



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### Breast Cancer Wisconsin

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

IB1 instance-based classifier
using 5 nearest neighbour(s) for classification

Time taken to build model: 0 seconds

=== Evaluation on test split ===

Time taken to test model on test split: 0.01 seconds

=== Summary ===

Correctly Classified Instances      163           95.3216 %
Incorrectly Classified Instances     8            4.6784 %
Kappa statistic                     0.9001
Mean absolute error                  0.0578
Root mean squared error              0.1668
Relative absolute error              12.3188 %
Root relative squared error          34.3647 %
Total Number of Instances           171
```

### Matriz de Confusión

$$\begin{bmatrix} 60 & 5 \\ 3 & 103 \end{bmatrix}$$



## 10-Fold-Cross-Validation

### IRIS

```
=== 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      143           95.3333 %
Incorrectly Classified Instances     7            4.6667 %
Kappa statistic                     0.93
Mean absolute error                  0.041
Root mean squared error              0.1444
Relative absolute error              9.235 %
Root relative squared error         30.6375 %
Total Number of Instances          150
```

### Matriz de Confusión

$$\begin{bmatrix} 50 & 0 & 0 \\ 0 & 47 & 3 \\ 0 & 4 & 46 \end{bmatrix}$$



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## WINE

```
=== 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      170           95.5056 %
Incorrectly Classified Instances      8           4.4944 %
Kappa statistic                    0.9321
Mean absolute error                 0.0449
Root mean squared error             0.1489
Relative absolute error             10.2363 %
Root relative squared error         31.7809 %
Total Number of Instances          178
```

## Matriz de Confusión

$$\begin{bmatrix} 59 & 0 & 0 \\ 2 & 64 & 5 \\ 0 & 1 & 47 \end{bmatrix}$$



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### Breast Cancer Wisconsin

```
=== 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      553           97.188 %
Incorrectly Classified Instances    16           2.812 %
Kappa statistic                    0.9394
Mean absolute error                 0.051
Root mean squared error            0.1626
Relative absolute error             10.8979 %
Root relative squared error        33.6243 %
Total Number of Instances          569
```

### Matriz de Confusión

$$\begin{bmatrix} 200 & 12 \\ 4 & 353 \end{bmatrix}$$