

The data set (and description) can be downloaded here:

<http://archive.ics.uci.edu/ml/machine-learning-databases/iris/iris.data>

#### Description:

1. Title: Iris Plants Database

Updated Sept 21 by C.Blake - Added discrepancy information

2. Sources:

(a) Creator: R.A. Fisher

(b) Donor: Michael Marshall (MARSHALL%PLU@io.arc.nasa.gov)

(c) Date: July, 1988

3. Past Usage:

- Publications: too many to mention!!! Here are a few.

1. Fisher, R.A. "The use of multiple measurements in taxonomic problems" Annual Eugenics, 7, Part II, 179-188 (1936); also in "Contributions to Mathematical Statistics" (John Wiley, NY, 1950).

2. Duda, R.O., & Hart, P.E. (1973) Pattern Classification and Scene Analysis. (Q327.D83) John Wiley & Sons. ISBN 0-471-22361-1. See page 218.

3. Dasarthy, B.V. (1980) "Nosing Around the Neighborhood: A New System Structure and Classification Rule for Recognition in Partially Exposed Environments". IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. PAMI-2, No. 1, 67-71.

-- Results:

-- very low misclassification rates (0% for the setosa class)

4. Gates, G.W. (1972) "The Reduced Nearest Neighbor Rule". IEEE Transactions on Information Theory, May 1972, 431-433.

-- Results:

-- very low misclassification rates again

5. See also: 1988 MLC Proceedings, 54-64. Cheeseman et al's AUTOCLASS II conceptual clustering system finds 3 classes in the data.

4. Relevant Information:

--- This is perhaps the best known database to be found in the pattern recognition literature. Fisher's paper is a classic in the field and is referenced frequently to this day. (See Duda & Hart, for example.) The data set contains 3 classes of 50 instances each, where each class refers to a type of iris plant. One class is linearly separable from the other 2; the latter are NOT linearly separable from each other.

--- Predicted attribute: class of iris plant.

--- This is an exceedingly simple domain.

--- This data differs from the data presented in Fishers article (identified by Steve Chadwick, [spchadwick@speedaz.net](mailto:spchadwick@speedaz.net) )

The 35th sample should be: 4.9,3.1,1.5,0.2,"Iris-setosa"  
where the error is in the fourth feature.

The 38th sample: 4.9,3.6,1.4,0.1,"Iris-setosa"  
where the errors are in the second and third features.

5. Number of Instances: 150 (50 in each of three classes)

6. Number of Attributes: 4 numeric, predictive attributes and the class

## 7. Attribute Information:

1. sepal length in cm
2. sepal width in cm
3. petal length in cm
4. petal width in cm
5. class:
  - Iris Setosa
  - Iris Versicolour
  - Iris Virginica

## 8. Missing Attribute Values: None

### Summary Statistics:

	Min	Max	Mean	SD	Class	Correlation
sepal length:	4.3	7.9	5.84	0.83		0.7826
sepal width:	2.0	4.4	3.05	0.43		-0.4194
petal length:	1.0	6.9	3.76	1.76		0.9490 (high!)
petal width:	0.1	2.5	1.20	0.76		0.9565 (high!)

## 9. Class Distribution: 33.3% for each of 3 classes.

### Citation Request:

Please refer to the repository <http://archive.ics.uci.edu/ml> (see citation policy).

See also Frank, A. & Asuncion, A. (2010). UCI Machine Learning Repository [<http://archive.ics.uci.edu/ml>].

Irvine, CA: University of California, School of Information and Computer Science.

### Descriptive statistics:

Dataset= iris\_versicolorvsvirginica : n= 100 , d= 4

Class1: n= 50

### Covariance matrix:

	[,1]	[,2]	[,3]	[,4]
[1,]	0.2664	0.0852	0.1829	0.0558
[2,]	0.0852	0.0985	0.0827	0.0412
[3,]	0.1829	0.0827	0.2208	0.0731
[4,]	0.0558	0.0412	0.0731	0.0391

### Correlation matrix:

	[,1]	[,2]	[,3]	[,4]
[1,]	1.0000	0.5259	0.7540	0.5465
[2,]	0.5259	1.0000	0.5605	0.6640
[3,]	0.7540	0.5605	1.0000	0.7867
[4,]	0.5465	0.6640	0.7867	1.0000

Median:                    5.9113 2.7996 4.2731 1.3255

Mean:                      5.936  2.77  4.26  1.326

### MCD-estimated:

MDC-0.975-Mean:    5.9146 2.8098 4.2268 1.3073

MDC-0.750-Mean:    5.9205 2.8154 4.2026 1.3051

MDC-0.500-Mean:    5.9146 2.8098 4.2268 1.3073

Class2: n= 50

Covariance matrix:

	[,1]	[,2]	[,3]	[,4]
[1,]	0.4043	0.0938	0.3033	0.0491
[2,]	0.0938	0.1040	0.0714	0.0476
[3,]	0.3033	0.0714	0.3046	0.0488
[4,]	0.0491	0.0476	0.0488	0.0754

Correlation matrix:

	[,1]	[,2]	[,3]	[,4]
[1,]	1.0000	0.4572	0.8642	0.2811
[2,]	0.4572	1.0000	0.4010	0.5377
[3,]	0.8642	0.4010	1.0000	0.3221
[4,]	0.2811	0.5377	0.3221	1.0000

Median: 6.5421 2.9864 5.4953 2.0428

Mean: 6.588 2.974 5.552 2.026

MCD-estimated:

MDC-0.975-Mean: 6.4622 2.9489 5.4289 2.0156

MDC-0.750-Mean: 6.4622 2.9489 5.4289 2.0156

MDC-0.500-Mean: 6.4256 2.9488 5.4 2.0302

Measures:

Mah.Distance: 3.7708

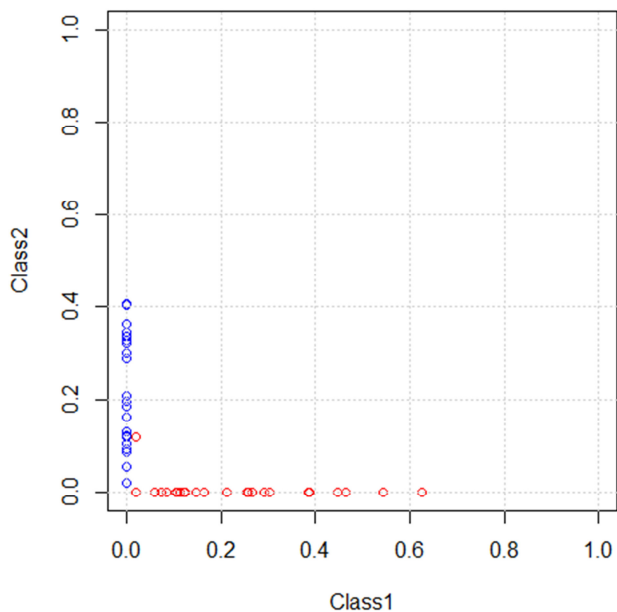
Mah.Distance-MCD-0.975: 4.1579

Mah.Distance-MCD-0.750: 4.0015

Mah.Distance-MCD-0.500: 4.1055

All the MCD estimates have been obtained after a slight perturbation of the data set

DD-Plot (zonoid): iris\_versicolorvsvirginica



DD-Plot (random Tukey): iris\_versicolorvsvirginica

