

The svcR Package

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Title svcR package

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Depends R (>= 2.3), spdep, quadprog, ade4

Description svcR implements a support vector machine technique for clustering

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iris_att	<i>data matrix</i>
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Description

this data ...

Usage

```
data(iris_att)
```

Format

a matrix of data

Source

a matrix of data

References

a matrix of data

iris_mat

data matrix

Description

this data ...

Usage

```
data(iris_mat)
```

Format

a matrix of data

Source

a matrix of data

References

a matrix of data

iris_var	<i>data matrix</i>
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Description

this data ...

Usage

```
data(iris_var)
```

Format

a matrix of data

Source

a matrix of data

References

a matrix of data

findModelCluster	<i>Computation of clustering model by support vector machine</i>
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Description

SvcR implements a clustering algorithm based on separator search in a feature space between points described in a data space. Data format is defined by an attribute/value table (matrix). The data are transformed within a kernel to a feature space into a unic cluster bounded with a ball radius and support vectors. We can used the radius of this ball in the data space to reconstruct the boundary shaped now in several clusters.

Usage

```
findModelCluster(MetOpt="", MetLab="", KernChoice="", Nu="", q="", K="", G="", Cx=
```

Arguments

MetOpt	option taking value 1 (randomization) or 2 (quadratic programming)
MetLab	option taking value 1 (grid labelling) or 2 (mst labelling) or 3 (knn labelling)
KernChoice	option taking value 0 (Euclidian) or 1 (RBF) or 2 (Exponential)
Nu	kernel parameter
q	kernel parameter
K	number of neighbours on the grid
G	size of the grid
Cx	1st data coordinate to plot for 2D cluster extraction
Cy	2nd data coordinate to plot for 2D cluster extraction
DName	Name of data which is the prefix of files : 'DName_mat.txt', 'DName_att.txt', 'DName_var.txt'
fileIn	path where to find files

Details

format of 'DName_mat.txt' (data matrix): 1 1 5.1 1 2 3.5 2 3 1.4 it mean $\text{mat}[1, 1] = 5.1$, $\text{mat}[1, 2] = 3.5$, $\text{mat}[2, 3] = 1.4$

format of 'DName_att.txt' : X1 X2 it mean X1 is the name of first column of the data matrix, X2 is the name of the second column of the data matrix

format of 'DName_var.txt' : v1 v2 it mean v1 is the name of first line of the data matrix, v2 is the name of the second line of the data matrix

Value

no return

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References

N.Turenne , Some Heuristics to speed-up Support Vector Clustering , technical report 2006, INRA, France <http://migale.jouy.inra.fr/~turenne/svc.pdf>

Examples

```
## exemple with iris data

MetOpt = 1;      # optimisation method with randomization
MetLab = 1;      # grid labelling
KChoice = 1;     # 0: eucli 1: radial 2: radial+dist
Nu      = 1.0;
q       = 2000;  # lot of clusters
```

```
K          = 1;    # only 1 nearest neighbour for clustering
Cx = Cy = 0; # we use principal component analysis factors
G          = 13; # size of the grid for cluster labelling
DName     = "iris";
fileIn    = ""; # fileIn might be such as "D:/R/library/svc/", if NULL it will work on iris da

findModelCluster(MetOpt, MetLab, KChoice, Nu, q, K, G, Cx, Cy, DName, fileIn);
```

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