

The trimcluster Package

February 16, 2008

Title Cluster analysis with trimming

Version 0.1-2

Date 2007-11-05

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Depends R (>= 1.9.0)

Suggests fpc

Description Trimmed k-means clustering.

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URL <http://www.homepages.ucl.ac.uk/~ucakche/>

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trimkmeans	<i>Trimmed k-means clustering</i>
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Description

The trimmed k-means clustering method by Cuesta-Albertos, Gordaliza and Matran (1997). This optimizes the k-means criterion under trimming a portion of the points.

Usage

```
trimkmeans(data,k,trim=0.1, scaling=FALSE, runs=100, points=NULL,
           countmode=runs+1, printcrit=FALSE,
           maxit=2*nrow(as.matrix(data)))

## S3 method for class 'tkm':
print(x, ...)
## S3 method for class 'tkm':
plot(x, data, ...)
```

Arguments

<code>data</code>	matrix or data.frame with raw data
<code>k</code>	integer. Number of clusters.
<code>trim</code>	numeric between 0 and 1. Proportion of points to be trimmed.
<code>scaling</code>	logical. If TRUE, the variables are centered at their means and scaled to unit variance before execution.
<code>runs</code>	integer. Number of algorithm runs from initial means (randomly chosen from the data points).
<code>points</code>	NULL or a matrix with k vectors used as means to initialize the algorithm. If initial mean vectors are specified, <code>runs</code> should be 1 (otherwise the same initial means are used for all runs).
<code>countmode</code>	optional positive integer. Every <code>countmode</code> algorithm runs <code>trimkmeans</code> shows a message.
<code>printcrit</code>	logical. If TRUE, all criterion values (mean squares) of the algorithm runs are printed.
<code>maxit</code>	integer. Maximum number of iterations within an algorithm run. Each iteration determines all points which are closer to a different cluster center than the one to which they are currently assigned. The algorithm terminates if no more points have to be reassigned, or if <code>maxit</code> is reached.
<code>x</code>	object of class <code>tkm</code> .
<code>...</code>	further arguments to be transferred to <code>plot</code> or <code>plotcluster</code> .

Details

`plot.tkm` calls `plotcluster` if the dimensionality of the data `p` is 1, shows a scatterplot with non-trimmed regions if `p=2` and discriminant coordinates computed from the clusters (ignoring the trimmed points) if `p>2`.

Value

An object of class 'tkm' which is a LIST with components

```
classification
integer vector coding cluster membership with trimmed observations coded as k+1.
```

means	numerical matrix giving the mean vectors of the k classes.
disttom	vector of squared Euclidean distances of all points to the closest mean.
ropt	maximum value of disttom so that the corresponding point is not trimmed.
k	see above.
trim	see above.
runs	see above.
scaling	see above.

Author(s)

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References

Cuesta-Albertos, J. A., Gordaliza, A., and Matran, C. (1997) Trimmed k-Means: An Attempt to Robustify Quantizers, *Annals of Statistics*, 25, 553-576.

See Also

[plotcluster](#)

Examples

```
set.seed(10001)
n1 <-60
n2 <-60
n3 <-70
n0 <-10
nn <- n1+n2+n3+n0
pp <- 2
X <- matrix(rep(0, nn*pp), nrow=nn)
ii <-0
for (i in 1:n1){
  ii <-ii+1
  X[ii,] <- c(5,-5)+rnorm(2)
}
for (i in 1:n2){
  ii <- ii+1
  X[ii,] <- c(5,5)+rnorm(2)*0.75
}
for (i in 1:n3){
  ii <- ii+1
  X[ii,] <- c(-5,-5)+rnorm(2)*0.75
}
for (i in 1:n0){
  ii <- ii+1
  X[ii,] <- rnorm(2)*8
}
tkm1 <- trimkmeans(X,k=3,trim=0.1,runs=3)
# runs=3 is used to save computing time.
```

```
print(tkml)  
plot(tkml,X)
```

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