

Package ‘ClusVis’

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Type Package

Title Gaussian-Based Visualization of Generic Model-Based Clustering

Version 1.0.0

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Description Gaussian-Based Visualization of clustering achieved by mixture model on any type of data. Visualization is based on the probabilities of classification.

License GPL (>= 2)

Imports Rcpp, MASS, parallel, mgcv, mvtnorm, Rmixmod

LinkingTo Rcpp, RcppArmadillo, mvtnorm

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Encoding UTF-8

LazyLoad yes

LazyData true

Collate 'clusvis.R' 'estimation.R' 'smartinit.R' 'RcppExports.R'
'plot.R' 'clusvismixmod.R' 'modessearch.R'

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R topics documented:

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| | |
|-----------------|---|
| ClusVis-package | <i>Model-based visualization of model-based clustering.</i> |
|-----------------|---|

Description

The main function for parameter inference is [clusvis](#). However, specific functions for parameter inference [clusvisMixmod](#) are implemented to deal with model-based clustering done with R packages [Rmixmod](#) and [Rmixcomp](#) respectively. After parameter inference, visualization is done with function [plotDensityClusVisu](#).

Details

| | |
|-----------|------------|
| Package: | ClusVis |
| Type: | Package |
| Version: | 1.0.0 |
| Date: | 2017-07-10 |
| License: | GPL-2 |
| LazyLoad: | yes |

Author(s)

Biernacki, C. and Marbac, M. and Vandewalle, V.

Examples

```
## Not run:
### Categorical data clustering
# Package loading
require(Rmixmod)

# Data loading (categorical data)
data(birds)

# Model-based clustering with 3 components
resmixmod <- mixmodCluster(birds, 3)
```

```

# Inference of the parameters used for results visualization (general approach)
# Probabilities of classification are not sampled from the model parameter,
# but observed probabilities of classification are used for parameter estimation
resvisu <- clusvis(log(resmixmod@bestResult@proba),
                  resmixmod@bestResult@parameters@proportions)

# Inference of the parameters used for results visualization
# (specific for Rmixmod results)
# It is better because probabilities of classification are generated
# by using the model parameters
resvisu <- clusvisMixmod(resmixmod)

# Component interpretation graph
plotDensityClusVisu(resvisu)

# Scatter-plot of the observation memberships
plotDensityClusVisu(resvisu, add.obs = TRUE)

## End(Not run)

```

clusvis

This function estimates the parameters used for visualization

Description

This function estimates the parameters used for visualization

Usage

```
clusvis(logtik.estim, prop = rep(1/ncol(logtik.estim), ncol(logtik.estim)),
        logtik.obs = NULL, maxit = 10^3, nbrandomInit = 12, nbcpu = 1)
```

Arguments

| | |
|--------------|--|
| logtik.estim | matrix. It contains the probabilities of classification used for parameter inference (should be sampled from the model parameter or computed from the observations). |
| prop | vector. It contains the class proportions (by default, classes have same proportion). |
| logtik.obs | matrix. It contains the probabilities of classification of the clustered sample. If missing, logtik.estim is used. |
| maxit | numeric. It limits the number of iterations for the Quasi-Newton algorithm (default 1000). |
| nbrandomInit | numeric. It defines the number of random initialization of the Quasi-Newton algorithm. |
| nbcpu | numeric. It specifies the number of CPU (only for linux) |

Value

Returns a list

Examples

```
## Not run:
### Package loading
require(Rmixmod)

# Data loading (categorical data)
data(birds)

# Model-based clustering with 3 components
resmixmod <- mixmodCluster(birds, 3)

# Inference of the parameters used for results visualization (general approach)
# Probabilities of classification are not sampled from the model parameter,
# but observed probabilities of classification are used for parameter estimation
resvisu <- clusvis(log(resmixmod@bestResult@proba),
                  resmixmod@bestResult@parameters@proportions)

## End(Not run)
```

| | |
|---------------|--|
| clusvisMixmod | <i>This function estimates the parameters used for visualization of model-based clustering performs with R package Rmixmod. To achieve the parameter inference, it automatically samples probabilities of classification from the model parameters</i> |
|---------------|--|

Description

This function estimates the parameters used for visualization of model-based clustering performs with R package Rmixmod. To achieve the parameter inference, it automatically samples probabilities of classification from the model parameters

Usage

```
clusvisMixmod(mixmodResult, sample.size = 5000, maxit = 10^3,
              nbrandomInit = 4 * mixmodResult@bestResult@nbCluster, nbcpu = 1,
              loccont = NULL)
```

Arguments

`mixmodResult` [[MixmodCluster](#)] It is an instance of class `MixmodCluster` returned by function `mixmodCluster` of R package `Rmixmod`.

| | |
|--------------|--|
| sample.size | numeric. Number of probabilities of classification sampled for parameter inference. |
| maxit | numeric. It limits the number of iterations for the Quasi-Newton algorithm (default 1000). |
| nbrandomInit | numeric. It defines the number of random initialization of the Quasi-Newton algorithm. |
| nbcpu | numeric. It specifies the number of CPU (only for linux). |
| loccont | numeric. Index of the column containing continuous variables (only for mixed-type data). |

Value

Returns a list

Examples

```
## Not run:
# Package loading
require(Rmixmod)

# Data loading (categorical data)
data(birds)

# Model-based clustering with 3 components
resmixmod <- mixmodCluster(birds, 3)

# Inference of the parameters used for results visualization
# (specific for Rmixmod results)
resvisu <- clusvisMixmod(resmixmod)

# Component interpretation graph
plotDensityClusVisu(resvisu)

# Scatter-plot of the observation memberships
plotDensityClusVisu(resvisu, add.obs = TRUE)

## End(Not run)
```

plotDensityClusVisu *Function for visualizing the clustering results*

Description

Function for visualizing the clustering results

Usage

```
plotDensityClusVisu(res, dim = c(1, 2), threshold = 0.95, add.obs = FALSE,
  positionlegend = "topright", xlim = NULL, ylim = NULL)
```

Arguments

| | |
|-----------------------------|--|
| <code>res</code> | object return by function <code>clusvis</code> or <code>clusvis</code> |
| <code>dim</code> | numeric. This vector of size two choose the axes to represent. |
| <code>threshold</code> | numeric. It contains the thresholds used for computing the level curves. |
| <code>add.obs</code> | boolean. If TRUE, coordinates of the observations are plotted. |
| <code>positionlegend</code> | character. It specifies the legend location. |
| <code>xlim</code> | numeric. It specifies the range of x-axis. |
| <code>ylim</code> | numeric. It specifies the range of y-axis. |

Examples

```
## Not run:  
# Package loading  
require(Rmixmod)  
  
# Data loading (categorical data)  
data(birds)  
  
# Model-based clustering with 3 components  
resmixmod <- mixmodCluster(birds, 3)  
  
# Inference of the parameters used for results visualization  
# (specific for Rmixmod results)  
resvisu <- clusvisMixmod(resmixmod)  
  
# Component interpretation graph  
plotDensityClusVisu(resvisu)  
  
# Scatter-plot of the observation memberships  
plotDensityClusVisu(resvisu, add.obs = TRUE)  
  
## End(Not run)
```

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