

Package ‘lsdbc’

July 22, 2025

Type Package

Title Locally Scaled Density Based Clustering

Version 0.1.0

Author Fella Ulandari and Robert Kurniawan

Maintainer Fella Ulandari <16.9134@stis.ac.id>

Description Implementation of Locally Scaled Density Based Clustering (LSDBC) algorithm proposed by Bicici and Yuret (2007) <[doi:10.1007/978-3-540-71618-1_82](https://doi.org/10.1007/978-3-540-71618-1_82)>. This package also contains some supporting functions such as betaCV() function and get_spectral() function.

License GPL

Encoding UTF-8

LazyData true

Imports stats

RoxygenNote 7.1.0

NeedsCompilation no

Repository CRAN

Date/Publication 2020-06-29 15:30:13 UTC

Contents

betaCV	2
get_spectral	3
lsdbc	3
Index	5

`betaCV`*BetaCV*

Description

function to calculates the BetaCV.

Usage

```
betaCV(clust,dist)
```

Arguments

<code>clust</code>	Determine in which cluster a data is belonged. <code>clust</code> should be a numeric, 0 indicates a noise and cluster start at 1.
<code>dist</code>	Distance matrix

Details

BetaCV measures how well the clusters based on compactness (intra-cluster distance) and separability (inter-cluster distance). BetaCV is the ratio between the average of intra-cluster distance to the average of inter-cluster distance. The smaller BetaCV value indicates the better the clustering.

Value

This function returns the betaCV value.

Author(s)

Fella Ulandari and Robert Kurniawan

References

University of Illinois. (2020, January 10). 6.1 Methods for Clustering Validation. Retrieved from Coursera: <https://www.coursera.org/lecture/cluster-analysis/6-1-methods-for-clustering-validation-k59pn>

See Also

<https://www.coursera.org/lecture/cluster-analysis/6-1-methods-for-clustering-validation-k59pn>

Examples

```
x <- runif(20,-1,1)
y <- runif(20,-1,1)
dataset <- cbind(x,y)
l <- lsdbc(dataset, 7,3,"euclidean")

dmat <- as.matrix(dist(dataset,"euclidean"))
betaCV(l$cluster,dmat)
```

get_spectral	<i>Generate Spectral Data</i>
--------------	-------------------------------

Description

Generate a dataset with spectral distribution.

Usage

```
get_spectral(n)
```

Arguments

n	Number of data to be generated
---	--------------------------------

Value

This function returns a dataframe with the spectral distribution

Author(s)

Fella Ulandari and Robert Kurniawan

References

Bicici, E., & Yuret, D. (2007). Locally Scaled Density Based Clustering. International Conference on Adaptive and Natural Computing Algorithms (pp. 739-748). Berlin: Springer.

Examples

```
##Generate 1000 data##  
  
get_spectral(1000)
```

lsdbc	<i>Locally Scaled Density Based Clustering</i>
-------	--

Description

Generate a locally scaled density based clustering as proposed by Bicici and Yuret (2007).

Usage

```
lsdbc(data, k, alpha, jarak = c("euclidean", "manhattan", "canberra", "geodesic"))
```

Arguments

<code>data</code>	Dataset consists of two variables (x,y) indicating coordinates of each data (point)
<code>k</code>	Number of neighbor to be considered
<code>alpha</code>	Parameter for determining local maximum
<code>jarak</code>	Type of distance to be used, the options are c("euclidean", "manhattan", "canberra", "geodesic")

Value

This function returns a list with the following objects:

<code>data</code>	a dataframe of the dataset used.
<code>cluster</code>	an integer vector coding cluster membership, 0 indicates a noise and cluster start at 1.
<code>parameter</code>	consist of parameter k and alpha.

Author(s)

Fella Ulandari and Robert Kurniawan

References

Bicici, E., & Yuret, D. (2007). Locally Scaled Density Based Clustering. International Conference on Adaptive and Natural Computing Algorithms (pp. 739-748). Berlin: Springer.

See Also

https://doi.org/10.1007/978-3-540-71618-1_82

Examples

```
x <- runif(20,-1,1)
y <- runif(20,-1,1)
dataset <- cbind(x,y)
l <- lsdbc(dataset, 7,3,"euclidean")
l
```

Index

- * **betaCV**
 - betaCV, [2](#)
- * **cluster validation**
 - betaCV, [2](#)
- * **gendata**
 - get_spectral, [3](#)
- * **get_spectral**
 - get_spectral, [3](#)
- * **lsdbc**
 - lsdbc, [3](#)

betaCV, [2](#)

get_spectral, [3](#)

lsdbc, [3](#)