

Package ‘sepro’

May 10, 2022

Type Package

Title Separation Process

Version 0.1

Date 2022-05-08

Description Estimating of parameters in statistical distributions

URL <https://github.com/hdrbv/sepro>

BugReports <https://github.com/hdrbv/sepro/issues>

Depends R (>= 4.0.0)

Imports devtools, roxygen2, mixtools, readxl, MASS, survival, npsurv, lsei, fitdistrplus, foreach, miscTools, dplyr, ggplot2, stargazer, testthat, usethis, available, cachem, pkgdown

Encoding UTF-8

Language en-US

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RoxygenNote 7.1.0

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sepro-package	<i>Separation Process</i>
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Description

Estimating of parameters in statistical distributions

Details

The DESCRIPTION file: This package was not yet installed at build time.

EM function from package Separation Process (sepro) - realisation of EM algorithm (Expectation-maximization algorithm)

Author(s)

NA

References

Dellaert, Frank (2002). "The Expectation Maximization Algorithm"

Examples

```
"For example we want to separate 2 Gaussian distributions
and estimate parameters of each one.
Let us assume that vector x1 - mixture of these distributions.
So we can use EM algorithm here:
EM(x1, k = 2)"
```

EM	<i>EM Function</i>
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Description

This function realized EM algorithm (Expectation-Maximization algorithm) for data clustering. In this case, for mixture models.

Usage

```
EM(x0, k)
```

Arguments

x0	- input data (vector)
k	- amount of clusters (mixture components)

Details

In initial step (Step_0) explorer must determine the initial gaussian mixture model parameters. Explorer can take any random parameters or (using surface analysis and some assumptions) take anothers.

In the first step (called E_Step) with function E_Step explorer calculate the posterior probabilities (which named "posterior.df") for each item of initial dataset.

In the second step (called M_Step) with function M_Step explorer update component parameters (using likelihood function).

After that, explorer repeat M_Step (100 times or until difference between current value of logarithm of likelihood function and previous value of logarithm of likelihood function will be less than 10^{-6}) in other words: logarithm of likelihood function didn't change much).

In the end explorer has updated probabilities for each item and updated parameters for each distribution (explorer should look at E.Step and M.Step)

Value

Parameters for each distribution

Author(s)

hdrbv

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