

Package ‘DEmixR’

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Type Package

Title Fit Two-Component Normal and Lognormal Mixture Models

Version 0.1.1

Description Fits, bootstraps, and evaluates two-component normal and lognormal mixture models. Includes diagnostic plots and statistical evaluation of mixture model fits using differential evolution optimization.

Imports DEoptim ($\geq 2.0.0$), pbapply ($\geq 1.0.0$), parallelly ($\geq 1.0.0$)

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Encoding UTF-8

RoxygenNote 7.3.3

Suggests knitr, rmarkdown, testthat ($\geq 3.0.0$)

VignetteBuilder knitr

NeedsCompilation no

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Repository CRAN

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bootstrap_mix2 *Bootstrap mixture parameters*

Description

Bootstrap mixture parameters

Usage

```
bootstrap_mix2(
  fit = NULL,
  x = NULL,
  par = NULL,
  family = NULL,
  B = 1000,
  parametric = TRUE,
  boot_size = NULL,
  parallelType = 0,
  quiet = 2,
  ci_level = 0.95
)
```

Arguments

fit	fitted object from fit_lognorm2 or fit_norm2
x	numeric vector (if fit not provided)
par	numeric vector of parameters (if fit not provided)
family	"lognormal" or "normal" (if fit not provided)
B	number of bootstrap replicates
parametric	logical, parametric bootstrap if TRUE
boot_size	size or fraction (if between 0 and 1) of bootstrap sample
parallelType	integer for DEoptim/pbapply parallelism
quiet	0/1/2 for verbosity
ci_level	confidence level

Value

list with cleaned bootstrap estimates, central tendency, and CI

evaluate_init	<i>Evaluate initial parameter values for mixture fitting</i>
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Description

Evaluate initial parameter values for mixture fitting

Usage

```
evaluate_init(  
  par_init,  
  x,  
  family = c("lognormal", "normal"),  
  lower = NULL,  
  upper = NULL,  
  pgtol = 1e-08  
)
```

Arguments

par_init	numeric vector of initial parameters
x	numeric vector of data
family	"lognormal" or "normal"
lower	numeric vector of lower bounds
upper	numeric vector of upper bounds
pgtol	numeric, gradient tolerance for optim

Value

list with success flag, optimized parameters, log-likelihood, and convergence

fit_lognorm2	<i>Fit 2-component lognormal mixture</i>
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Description

Fit 2-component lognormal mixture

Usage

```
fit_lognorm2(x, ...)
```

Arguments

x numeric vector of data to fit
 ... additional arguments passed to [.fit_mix2_core](#)

Value

list with fitted parameters and metrics

fit_norm2	<i>Fit 2-component normal mixture</i>
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Description

Fit 2-component normal mixture

Usage

```
fit_norm2(x, ...)
```

Arguments

x numeric vector of data to fit
 ... additional arguments passed to [.fit_mix2_core](#)

Value

list with fitted parameters and metrics

prelim_plots	<i>Preliminary diagnostic plots</i>
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Description

Preliminary diagnostic plots

Usage

```
prelim_plots(  
  x,  
  which = c("hist"),  
  hist_bins = 60,  
  col_hist = "grey85",  
  col_density = "darkorange",  
  col_qq = "grey60",  
  col_line = "darkorange"  
)
```

Arguments

x	numeric vector
which	character vector: "hist", "qq", "pp", "logqq"
hist_bins	number of bins for histogram
col_hist	color for histogram
col_density	color for density line in histogram
col_qq	color for qq points
col_line	color for lines in "qq", "pp", "logqq" plots

Value

no return value, called for side effects (generating plots)

select_best_mixture *Select best mixture model (lognormal or normal) based on BIC*

Description

Select best mixture model (lognormal or normal) based on BIC

Usage

```
select_best_mixture(x, n_runs = 1, NP = 50, itermax = 10000, quiet = 2)
```

Arguments

x	numeric vector
n_runs	number of DEoptim runs
NP	population size for DEoptim
itermax	maximum iterations
quiet	verbosity

Value

list with best fit, all fits, and BICs

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