Package 'StMoSim'

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Type Package

Title Quantile-Quantile Plot with Several Gaussian Simulations

Version 3.2.0

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BugReports https://github.com/matthiassalvisberg/StMoSim/issues

Description Plots a QQ-Norm Plot with several Gaussian simulations.

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NeedsCompilation yes

SystemRequirements GNU make

Imports methods,stats,graphics,RcppParallel,Rcpp

LinkingTo RcppParallel,Rcpp

RoxygenNote 7.3.3

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Contents

qqnormSim *Quantile-Quantile plot with several Gaussian simulations.*

Description

Plots a QQ plot of the variable x with nSim Gaussian simulations.

Usage

```
qqnormSim(
  x,
  nSim = 500,
  mOfVar = "mad",
  main = "Normal Q-Q Plot - SIM",
  xlab = "Theoretical Quantiles",
  ylab = "Sample Quantiles",
  qqnormCol = "black",
  qqnormPch = 1,
  qqlineCol = "#cdd2d015",
  qqlineLwd = 3
)

## S4 method for signature 'lm'
qqnormSim(
  x,
  nSim = 500,
  mOfVar = "mad",
  main = "Normal Q-Q Plot - SIM",
  xlab = "Theoretical Quantiles",
  ylab = "Sample Quantiles",
  qqnormCol = "black",
  qqnormPch = 1,
  qqlineCol = "#cdd2d015",
  qqlineLwd = 3
)

## S4 method for signature 'numeric'
qqnormSim(
  x,
  nSim = 500,
  mOfVar = "mad",
  main = "Normal Q-Q Plot - SIM",
  xlab = "Theoretical Quantiles",
  ylab = "Sample Quantiles",
  qqnormCol = "black",
  qqnormPch = 1,
  qqlineCol = "#cdd2d015",
```

```
  qqlineLwd = 3
)
```

Arguments

x	a lm-object or a numeric vector. If it's a lm-object its residuals are plotted.
nSim	*[optional]* the number of simulations you like to add to the plot.
mOfVar	*[optinal]* a measure of variation. ("mad" or "sd")
main	*[optional]* an overall title for the plot.
xlab	*[optional]* a title for the x axis.
ylab	*[optional]* a title for the y axis.
qqnormCol	*[optional]* color of the obervations in the plot.
qqnormPch	*[optional]* point character of the observations in the plot.
qqlineCol	*[optional]* color of the simulations in the plot.
qqlineLwd	*[optional]* line width of the simulations. should not be higher than 3.

Details

Two estimators are required for the simulation of the normal distribution. Since the normal distribution is a two-parameter family distribution. Default measure of location is the mean. Default measure of variation is the mad. This gives a robust estimation of the standard deviation even if there are outliers in the sample. Likewise this can be changed with the parameter `mOfVar`.

Value

invisible(NULL)

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See Also

the basic graph corresponds to qqnorm

Examples

```
## Not run:

######## qqnorm vs. qqnormSim ########

par(mfrow = c(1,2))
x<- rnorm(100)
qqnorm(x)
qqline(x)
qqnormSim(x)
par(mfrow = c(1,1))
```

```
######## basic functionality/arguments ########

# The observations should behave like a simulation,
# because the observations are sampled from a Gaussian distribution.
qqnormSim(x = rnorm(100))

# If you don't feel comfortable with the mad as
# measure of variation you can change it to the standard deviation.
qqnormSim(x = rnorm(100),
          mOfVar = "sd")

# On the first glance its obvious that this sample
# doesn't originate from a Gaussian distribution due to the heavy tails.
qqnormSim(x = rt(100,df = 4))

Reduce the simulation tracks from 500 to 50. (500 is default).
Not recommended unless you have not enough computation power.
qqnormSim(x = rnorm(100),
          nSim = 50)

######## graphical arguments ########

# set title and axes labels.
qqnormSim(x = rnorm(100),
          main = "main title",
          xlab = "x-axis label",
          ylab = "y-axis label")

# I don't recommend fancy colors, unless you need it for your corporate identity.
qqnormSim(x = rnorm(100),
          qqnormCol = "#ff0000",
          qqnormPch = 16,
          qqlineCol = "greenyellow",
          qqlineLwd = 1)


## End(Not run)
```

StMoSim — *StMoSim: Plots a QQ-Norm Plot with Several Gaussian Simulations*

Description

With this package you can simulate several lines into the QQ-Norm Plot under the assumption of Gaussian distribution. If the realised observations lie inside of the simulations tracks there is the possibility that the observations stem from a Gaussian distribution. This can be very useful in residual analysis where you have to evaluate whether the model residuals fit the assumption of gaussian distributed terms or not.

Changelog

————<CHANGELOG>————

——-< v3.2.0 - 2025-12-21 >——-

update new recommendations from RcppParallel package / The CRAN Team

——-< v3.1.1 - 2018-11-19 >——-

provide more (plot) arguments to the user.

updated documentation - added more expamples.

added BugReports argument in DESCRIPTION.

implemented all recommendations from RcppParallel package.

——-< v3.1 - 2018-11-13 >——-

Minor bug fixes, due to CHECK changes on CRAN.

Moved documentation to roxygen2.

——-< v3.0 - 2014-10-16 >——-

Computation intense code moved to C++.

Moved to parallel computation, thanks to Rcpp/RcppParallel !

Minor bug fixes.

——-< v2.2 - 2012-02-24 >——-

Minor bug fixes, due to CHECK changes on CRAN.

——-< v2.1 - 2012-02-24 >——-

Minor bug fixes.

——-<v2.0 - 2011-03-31 >——-

Moved to S4 Classes.

——-<v1.1 - 2010-05-03 >——-

First Version on CRAN.

————</CHANGELOG>————

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See Also

Useful links:

- Report bugs at https://github.com/matthiassalvisberg/StMoSim/issues

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