Package ‘StMoSim’

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Type Package

Title Quantile-Quantile Plot with Several Gaussian Simulations

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Author Matthias Salvisberg

Maintainer Matthias Salvisberg <matthias.salvisberg@gmail.com>

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

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

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NeedsCompilation yes

SystemRequirements C++11, GNU make

Imports methods,stats,graphics,RcppParallel,Rcpp

LinkingTo RcppParallel,Rcpp

RoxygenNote 6.1.1

Repository CRAN

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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

[optional] 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 observations 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.
qqnormSim

Value

invisible(NULL)

Author(s)

Matthias Salvisberg <matthias.salvisberg@gmail.com>

See Also

the basic graph corresponds to qqnorm

Examples

```r
## 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.

```r
qqnormSim(x = rnorm(100),
    qnormCol = "#ff0000",
    qnormPch = 16,
    qqlineCol = "greenyellow",
    qqlineLwd = 1)
```

```
## End(Not run)
```

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**StMoSim**

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

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### 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>---

---< v3.1.1 - 2018-11-19 >---

provide more (plot) arguments to the user.
updated documentation - added more examples.
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.
First Version on CRAN.

Author(s)

Matthias Salvisberg <matthias.salvisberg@gmail.com>
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