Package 'SimTools'

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Title Toolkit for Simulation output including Monte Carlo and MCMC

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Imports mcmcse, mvtnorm

Description Toolkit for Simulation output including Monte Carlo and MCMC

License GPL (>= 2)

Encoding UTF-8

RoxygenNote 7.1.1

NeedsCompilation no

R topics documented:

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plot.Smcmc   *Plot Smcmc*

Description

Density plots with simultaenous error bars around means and quantiles for MCMC data. The error bars account for the correlated nature of the process.

Usage

```
## S3 method for class 'Smcmc'
plot(x, Q = c(0.1, 0.9), alpha = 0.05, thresh = 0.001, iid = FALSE, plot = TRUE, mean = TRUE, border
```

Arguments

x	: a 'Smcmc' class object
Q	: vector of quantiles
alpha	: confidence level of simultaneous confidence intervals
thresh	: numeric typically less than .005 for the accuracy of the simulteaneous procedure
iid	: logical argument for constructing density plot for iid samples. Defaults to FALSE
plot	: logical argument for is plots are to be returned
mean	: logical argument whether the mean is to be plotted
border	: whether a border is required for the simultaneous confidence intervals
mean.col	: color for the mean confidence interval
quan.col	: color for the quantile confidence intervals
opaq	: opacity of mean.col and quan.col. A value of 0 is transparent and 1 is completely opaque.
auto.layout	: logical argument for an automatic layout of plots
ask	: activating interactive plots
...	: arguments passed on to the density plot in base R

Value

returns a plot of the univariate density estimates with simultaneous confidence intervals wherever asked. If plot == FALSE a list of estimates and simultaneous confidence intervals.

References

Robertson, N., Flegal, J. M., Vats, D., and Jones, G. L., "Assessing and Visualizing Simultaneous Simulation Error", Journal of Computational and Graphical Statistics, 2020.

Examples

```
# Producing Markov chain
chain <- numeric(length = 1e3)
chain[1] <- 0
err <- rnorm(1e3)
for(i in 2:1e3)
{
  chain[i] <- .3*chain[i-1] + err[i]
}
plot(chain)
```

Smcmc   *Plot Smcmc*

Description

Density plots with simultaenous error bars around means and quantiles for MCMC data. The error bars account for the correlated nature of the process.

Usage

```
Smcmc(data, batch.size = FALSE, varnames = colnames(data))
```

Arguments

data	: an MCMC output matrix with nsim rows and p columns
batch.size	: logical vector, if true, calculates the batch size appropriate for this Markov chain. Setting to TRUE saves time in future steps.
varnames	: a character string equal to the number of columns in data

Value

an Smcmc class object

Examples

```
# Producing Markov chain
chain <- numeric(length = 1e3)
chain[1] <- 0
err <- rnorm(1e3)
for(i in 2:1e3)
{
  chain[i] <- .3*chain[i-1] + err[i]
}
smcmc.obj <- Smcmc(chain)
```

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