Package 'simTargetCov'

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Type Package

Title Data Transformation or Simulation with Empirical Covariance Matrix

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Description Transforms or simulates data with a target empirical covariance matrix supplied by the user. The method to obtain the data with the target empirical covariance matrix is described in Section 5.1 of Christidis, Van Aelst and Zamar (2019) <doi:10.48550/arXiv.1812.05678>.

License GPL (>= 2)

Biarch true

Imports MASS, stats

RoxygenNote 7.0.2

Suggests testthat

NeedsCompilation no

Repository CRAN

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simTargetCov *Data Transformation or Simulation with Target Empirical Covariance Matrix*

Description

simTargetCov transforms or simulates data with a target empirical covariance matrix supplied by the user.

Usage

```
simTargetCov(n, p, target, X = NULL)
```

Arguments

n	Number of observations for data matrix output.
p	Number of variables for data matrix output.
target	Target empirical covariance for data matrix output.
X	Data matrix for transformation.

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Examples

```
# Function to create target covariance matrix with kernel set to r
target_cor <- function(r, p){
  Gamma <- diag(p)
  for(i in 1:(p-1)){
    for(j in (i+1):p){
      Gamma[i,j] <- Gamma[j,i] <- r^(abs(i-j))
    }
  }
  return(Gamma)
}

# Transformation of data to target empirical covariance
dat.target.cov <- simTargetCov(X = MASS::mvrnorm(30, mu = rep(0,6),
                               Sigma = target_cor(0.5,6)),
                               target = target_cor(0.5,6))
round(cov(dat.target.cov), 2)

# Simulation of data with target empirical covariance
sim.target.cov <- simTargetCov(n = 30, p = 6, target = target_cor(0.5,6))
round(cov(sim.target.cov), 2)
```

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