Package 'mc'

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Type Package

Title discrete and continuous time markov chain

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Description In the mc package, we deal with both discrete time markov chain and continuous time markov chain.

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R topics documented:

`mc-package` *discrete and continuous time markov chain*

Description

In the mc package, we deal with both discrete time markov chain and continuous time markov chain.

Details

The DESCRIPTION file: This package was not yet installed at build time.

Index: This package was not yet installed at build time.
First, we should new a object of the class. e.g. mymc <- new("mc"). Then the user can define its transition matrix m, giving m as parameter to the object, e.g. mymc@pijdef <- m. Finally, we can call the function. e.g. stn(mymc).

Author(s)

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Examples

```
#Test case 1:finite state space with trasition matrix
mymc <- new("mc")
m <- matrix(rep(0, 9) , nrow=3)
m[1, 1] <- 0.5
m[1, 2] <- 0.5
m[2, 3] <- 0.5
m[2, 1] <- 0.5
m[3, 1] <- 1
mymc@pijdef <- m
# call the stationary distribution method
stn(mymc)
# call the expected hitting time method
exphit(mymc, 1, 3)
```

`callsleavingqueue-methods`
Methods for Function `callsleavingqueue`

Description

function to calculate proportion of calls resulting in customer hanging up

Methods

`signature(z = "mc")` z parameter means the object of class "mc"

exphit-methods *Methods for Function* exphit

Description

Methods for claculating expected hitting time of transforming from state i to state j

Methods

signature(z = "mc") z parameter means the object of class "mc"
signature(i = "ANY") state i
signature(j = "ANY") state j

finddeclined-methods *Methods for Function* finddeclined

Description

function to find declined calls

Methods

signature(z = "mc") z parameter means the object of class "mc"

findpi-methods *Methods for Function* findpi

Description

Methods for claculating pi

Methods

signature(z = "mc")
signature(k = "ANY")

findpicontin-methods *Methods for Function* findpicontin

Description

function to find pi vector

Methods

signature(z = "mc") z parameter means the object of class "mc"

findq-methods *Methods for Function* findq

Description

Methods for claculating the Q matrix

Methods

signature(z = "mc") z parameter means the object of class "mc"

mc-class *Class* "mc"

Description

The mc class is a markov chain class, considering both discrete time and continous time.

Objects from the Class

Objects can be created by calls of the form new("mc"). mymc <- new("mc")

Slots

pijdef: Object of class "matrix"

qidef: Object of class "vector"

Methods

callsleavingqueue signature(z = "mc"): ...

exphit signature(z = "mc"): ...

finddeclined signature(z = "mc"): ...

findpi signature(z = "mc"): ...

findpicontin signature(z = "mc"): ...

findq signature(z = "mc"): ...

rowsb signature(z = "mc"): ...

stn signature(z = "mc"): ...

Author(s)

Guicheng Wu, Eric Sturzinger, Rafael Braz Reboucas Lourenco

References

Matloff, Norm. "From Algorithm to Z-Scores: Probabilistic and Statistical Modeling in Computer Science." (2009).

Examples

```
showClass("mc")
```

rowsb-methods *Methods for Function* rowsb

Description

Methods for calculating the number of rows and colums for the Q matrix based on all combinations of i+j<= b

Methods

`signature(z = "mc")` z parameter means the object of class "mc"

`signature(b = "ANY")` maximum calls in the system

stn-methods *Methods for Function* stn

Description

Methods for claculting the stationary distribution, considering both finite state and infinite state

Methods

`signature(z = "mc")` x parameter means the object of class "mc"

`signature(e = "ANY")` e parameter means the increase rate of k

`signature(dif = "ANY")` dif parameter means difference parameter

`signature(sum_pi = "ANY")` sum_pi parameter means sum of pi, it should be close to 1

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