Package 'MOrder'

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Title Check Time Homogeneity and Markov Chain Order

Description MOrder provide functions to check time homogeneity and order of markov chain by using chi-squared test, AIC value and BIC value.

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R topics documented:

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checkTH *Determine if Time Homogeneity is present in the give sequence.*

Description

Takes a sequence as input and finds if Time Homogeneity is present or not.

Usage

```
checkTH(seq)
```

Arguments

seq	- A sequence whose Time Homogeneity is to be determined

Value

Returns nothing but prints output representing presence or absence of Time Homogeneity

References

[1] Markov Chain Test for Time Dependence and Homogeneity: An Analytical and Empirical Evaluation Baris Tan and Kamil Yilmaz European Journal of Operational Research 137 (2002) 524-543

Examples

```
## Check for a homogenous sequence
seq <- c(1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2)
checkTH(seq)

## Check for a heterogenous sequence
seq <- c(1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1)
checkTH(seq)
```

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getOrderAIC *Get order of sequence based on AIC value*

Description

Takes a sequence as input and find AIC value for diffrent orders

Usage

```
getOrderAIC(seq)
```

Arguments

seq	- A sequence whose order to be determined

Value

Returns nothing but prints order of given sequence according to AIC value

References

[1] Estimating the order of Markov chain Richard Katz Technometrics, vol 12 no 3 (August 1981) pp 243-249

[2] Determination of the Order of a Markov Chain L.C.Zhao, C.C.Y.Dorea and C.R.Goncalves Statistical inference for stochastic processes4, 2001 pp 273-282

[3] Statistical inference about Markov Chain T.W.Anderson and Leo.A.Goodman. The Annals of Mathematical Statistics, Vol 28, No 1 (March 1957), pp89-110

Examples

```
## Check a first order sequence
seq <- c(1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2)
getOrderAIC(seq)

## Check for second order sequence
seq <- c(1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2)
getOrderAIC(seq)

## Check for random order sequence
seq <- sample(1:2,50,replace=TRUE)
getOrderAIC(seq)
```

`getOrderBIC` *Get order of sequence based on BIC value*

Description

Takes a sequence as input and find BIC value for diffrent orders

Usage

```
getOrderBIC(seq)
```

Arguments

`seq`	- A sequence whose order to be determined

Value

Returns nothing but prints order of given sequence according to BIC value

References

[1] Estimating the order of Markov chain Richard Katz Technometrics, vol 12 no 3 (August 1981) pp 243-249

[2] Determination of the Order of a Markov Chain L.C.Zhao, C.C.Y.Dorea and C.R.Goncalves Statistical inference for stochastic processes4, 2001 pp 273-282

[3] Statistical inference about Markov Chain T.W.Anderson and Leo.A.Goodman. The Annals of Mathematical Statistics, Vol 28, No 1 (March 1957), pp89-110

Examples

```
## Check a first order sequence
seq <- c(1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2)
getOrderBIC(seq)

## Check for second order sequence
seq <- c(1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2)
getOrderBIC(seq)

## Check for random order sequence
seq <- sample(1:2,50,replace=TRUE)
getOrderBIC(seq)
```

`getOrderPval` *Get order of sequence based on P-value*

Description

Takes a sequence as input and find P-value for diffrent orders

Usage

```
getOrderPval(seq)
```

Arguments

`seq`	- A sequence whose order to be determined

Value

Returns nothing but prints order of given sequence according to P-value

References

[1] Estimating the order of Markov chain Richard Katz Technometrics, vol 12 no 3 (August 1981) pp 243-249

[2] Determination of the Order of a Markov Chain L.C.Zhao, C.C.Y.Dorea and C.R.Goncalves Statistical inference for stochastic processes4, 2001 pp 273-282

[3] Statistical inference about Markov Chain T.W.Anderson and Leo.A.Goodman. The Annals of Mathematical Statistics, Vol 28, No 1 (March 1957), pp89-110

Examples

```
## Check a first order sequence
seq <- c(1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2,1,2)
getOrderPval(seq)

## Check for second order sequence
seq <- c(1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2,1,1,2,2)
getOrderPval(seq)

## Check for random order sequence
seq <- sample(1:2,50,replace=TRUE)
getOrderPval(seq)
```

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