Package: SudokuDesigns (via r-universe)

November 1, 2024

Type Package

Title Sudoku as an Experimental Design

Version 1.0.0

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Description Sudoku designs (Bailey et al., 2008<doi:10.1080/00029890.2008.11920542>) can be used as experimental designs which tackle one extra source of variation than conventional Latin square designs. Although Sudoku designs are similar to Latin square designs, only addition is the region concept. Some very important functions related to row-column designs as well as block designs along with basic functions are included in this package.

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Encoding UTF-8

RoxygenNote 7.3.2

NeedsCompilation no

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Date/Publication 2024-10-31 13:40:25 UTC

Repository https://ashutoshdalal97.r-universe.dev

RemoteUrl https://github.com/cran/SudokuDesigns

RemoteRef HEAD

RemoteSha c572c2adb3295def039f6ddaee6828b6ebf1c157

Contents

`Check_IBD` *Check properties of an incomplete block design (IBD)*

Description

Check properties of an incomplete block design (IBD)

Usage

```
Check_IBD(Design)
```

Arguments

`Design`	Provide an IBD in matrix format

Value

Provides C matrix (Information matrix), eigenvalues(EVs) and canonical efficiency factor (CEF) of a given IBD

Examples

```
library(SudokuDesigns)
Design<-matrix(c(1,2,3,2,5,3,2,4,6),nrow=3,byrow=TRUE)
Check_IBD(Design)
```

`Check_IRC` *Check properties of an incomplete row-column design (IRC)*

Description

Check properties of an incomplete row-column design (IRC)

Usage

```
Check_IRC(Design)
```

Arguments

Design	Provide an IRC in matrix format

Value

Provides C matrix (Information matrix), eigenvalues(EVs) and canonical efficiency factor (CEF) of a given IBD

Examples

```
library(SudokuDesigns)
Design<-matrix(c(1,2,3,2,5,3,2,4,6),nrow=3,byrow=TRUE)
Check_IRC(Design)
```

Check_MP_Inverse *Moore Penrose Inverse*

Description

Moore Penrose Inverse

Usage

```
Check_MP_Inverse(matrix)
```

Arguments

matrix	Any matrix

Value

Provides Moore Penrose inverse of a given matrix

Examples

```
library(SudokuDesigns)
mat<-matrix(c(1,2,3,2,5,3,2,4,6),nrow=3,byrow=TRUE)
Check_MP_Inverse(mat)
```

Check_Obsn_vs_Col_Matrix

Observations Vs Columns Incidence Matrix

Description

Observations Vs Columns Incidence Matrix

Usage

```
Check_Obsn_vs_Col_Matrix(Matrix)
```

Arguments

Matrix	Any matrix

Value

Generates observations vs columns incidence matrix of a given design

Examples

```
library(SudokuDesigns)
mat1<-matrix(c(1,2,3,4,1,3,6,2,8,1,8,3),nrow=4,byrow=TRUE)
mat1
Check_Obsn_vs_Col_Matrix(mat1)
```

Check_Obsn_vs_Reg_Matrix

Observations Vs Regions Incidence Matrix

Description

Observations Vs Regions Incidence Matrix

Usage

```
Check_Obsn_vs_Reg_Matrix(Design, Region)
```

Arguments

Design	A Sudoku design in matrix format
Region	A matrix of regions according to the Sudoku design

Value

Observations vs regions incidence matrix for a given Sudoku design and region matrix

Examples

```
library(SudokuDesigns)
design<-matrix(c(1,2,3,4,3,4,1,2,2,1,4,3,4,3,2,1),nrow=4,ncol=4,byrow=TRUE)
region<-matrix(c(1,1,2,2,1,1,2,2,3,3,4,4,3,3,4,4),nrow=4,ncol=4,byrow=TRUE)
Check_Obsn_vs_Reg_Matrix(design, region)
```

Check_Obsn_vs_Rows_Matrix

Observations Vs Rows Incidence Matrix

Description

Observations Vs Rows Incidence Matrix

Usage

```
Check_Obsn_vs_Rows_Matrix(Matrix)
```

Arguments

Matrix	Any matrix

Value

Generates observations vs rows matrix for a given design

Examples

```
library(SudokuDesigns)
mat1<-matrix(c(1,2,3,4,1,3,6,2,8,1,8,3),nrow=4,byrow=TRUE)
mat1
Check_Obsn_vs_Rows_Matrix(mat1)
```

Check_Obsn_vs_Trt_Matrix

Observations Vs Treatments Incidence Matrix

Description

Observations Vs Treatments Incidence Matrix

Usage

```
Check_Obsn_vs_Trt_Matrix(Matrix)
```

Arguments

Matrix	Any matrix

Value

Generates observations Vs treatments matrix

Examples

```
library(SudokuDesigns)
mat1<-matrix(c(1,2,3,4,1,3,6,2,8,1,8,3),nrow=4,byrow=TRUE)
mat1
Check_Obsn_vs_Trt_Matrix(mat1)
```

Check_Rank *Checking Rank of a Matrix*

Description

Checking Rank of a Matrix

Usage

```
Check_Rank(matrix)
```

Arguments

matrix	Any matrix

Value

Print the rank of the given matrix

Examples

```
library(SudokuDesigns)
mat<-matrix(c(1,2,3,2,4,6,5,2,3),nrow=3,byrow=TRUE)
Check_Rank(mat)
```

Check_Replication_Matrix *Replication Matrix*

Description

Replication Matrix

Usage

```
Check_Replication_Matrix(matrix)
```

Arguments

matrix	Any matrix

Value

A diagonal matrix of replications for each treatment.

Examples

```
library(SudokuDesigns)
mat11<-matrix(c(1,2,3,4,1,3,6,2,8,1,8,3),nrow=4,byrow=TRUE)
mat11
Check_Replication_Matrix(mat11)
```

Check_Sudoku_Design *Check Properties of Sudoku Designs*

Description

Check Properties of Sudoku Designs

Usage

```
Check_Sudoku_Design(Design, Region)
```

Arguments

Design	Give the Sudoku design in a matrix format
Region	Provide a Region matrix corresponding to Sudoku design

Value

Design along with design parameters, C matrix (Information matrix), eigenvalues(EVs) and canonical efficiency factor (CEF) of a given Sudoku design

Examples

```
library(SudokuDesigns)
design<-matrix(c(1,2,3,4,3,4,1,2,2,1,4,3,4,3,2,1),nrow=4,ncol=4,byrow=TRUE)
region<-matrix(c(1,1,2,2,1,1,2,2,3,3,4,4,3,3,4,4),nrow=4,ncol=4,byrow=TRUE)
Check_Sudoku_Design(design,region)
```

`Check_Tupple` *Find tupple occurances in a given matrix rows*

Description

Find tupple occurances in a given matrix rows

Usage

```
Check_Tupple(matrix, tupple)
```

Arguments

`matrix`	Any matrix
`tupple`	A vector of numbers

Value

Number of times a tupple occurs within the rows of a given matrix

Examples

```
mat1<-matrix(c(1,2,3,4,1,3,6,2,8,1,8,3),nrow=4,byrow=TRUE)
mat1
Check_Tupple(mat1,c(1,2))
```

Index