Package ‘DoE.multi.response’

August 22, 2019

Title Construct Multi-Response Experimental Designs

Version 0.1.0

Description Construct multi-response experimental designs, such as a Unique Factor Central Composite Design (UF-CCD), given information (from screening or expert knowledge) about which factors are related to each response variable (Wilmina M. Marget & Max D. Morris, 2019 <doi:10.1080/00401706.2018.1549102>).

Depends R (>= 3.6), DoE.wrapper (>= 0.10)

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Encoding UTF-8

LazyData true

RoxygenNote 6.1.1

Suggests testthat

NeedsCompilation no

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ufactors

This function generates the unique factors for a unique factor CCD.

Description
This function generates the unique factors for a unique factor CCD.

Usage
ufactors(x)

Arguments
x a matrix of 0’s and 1’s indicating factor and response relationships. Rows represent responses; columns represent factors. A 1 represents that the factor for that column is related to the response for that row.

Value
numeric vector indicating unique factors

Examples
#Response 1 is related to factors 1, 2, and 3
#Response 2 is related to factors 2, 3, and 4
#Response 3 is related to factors 1, 3, and 5
#Response 4 is related to factors 1 and 4
x<-matrix(c(1,1,1,0,0,
            0,1,1,1,0,
            1,0,1,0,1,
            1,0,0,1,0), nrow = 4,byrow = TRUE)
ufactors(x)

ufccd

This function generates the design matrix for a unique factor CCD.

Description
This function generates the design matrix for a unique factor CCD.

Usage
ufccd(x, ...)

Arguments

x  a matrix of 0’s and 1’s indicating factor and response relationships. Rows represent responses; columns represent factors. A 1 represents that the factor for that column is related to the response for that row.

...  passes other arguments through ccd.design() from the DoE.wrapper package. Does not currently support factor.names.

Value

a data.frame that is a unique factor Central Composite Design with values coded so that factorial points are 1 and -1

Examples

#Response 1 is related to factors 1, 2, and 3
#Response 2 is related to factors 2, 3, and 4
#Response 3 is related to factors 1, 3, and 5
#Response 4 is related to factors 1 and 4
x<-matrix(c(1,1,1,0,0,
            0,1,1,0,0,
            1,0,1,1,0,
            1,0,0,1,0), nrow = 4,byrow = TRUE)
ufccd(x)
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