Package: EMSaov (via r-universe)

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Type Package

Title The Analysis of Variance with EMS

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Description Provides the analysis of variance table including the expected mean squares (EMS) for various types of experimental design. When some variables are random effects or we use special experimental design such as nested design, repeated-measures design, or split-plot design, it is not easy to find the appropriate test, especially denominator for F-statistic which depends on EMS.

License GPL (>= 2)

Imports shiny, graphics

RoxygenNote 6.0.1

NeedsCompilation no

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Repository https://ek-lee.r-universe.dev

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

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Contents

`ApproxF` *Calculate ANOVA with approximate F value*

Description

Calculate ANOVA with approximate F value

Usage

```
ApproxF(SS.table,approx.name)
```

Arguments

`SS.table`	result from EMSanova
`approx.name`	rowname in SS.table to calculate approximate F value for the test.

Examples

```
data(film)
anova.result<-EMSanova(thickness~Gate*Operator*Day,data=film,
                       type=c("F","R","R"))
anova.result
ApproxF(SS.table=anova.result,approx.name="Gate")
EMSanova(thickness~Gate+Operator+Day,data=film,
          type=c("F","R","R"),
          approximate=TRUE)
```

`baseball` *Nested factorial design of Measurement of velocity*

Description

There was on a measurement of velocity of a baseball throw in meters per second. Three groups of subjects were involved, two being subjected to special experimental training and the third acting as a control with no special training. Each group has 7 subjects and each subject was given a pretest and posttest.

Usage

```
data("baseball")
```

Format

A data frame with 42 observations on the following 4 variables.

`velocity` a numeric vector

`test` a factor with levels `Pre` `Post`

`Group` a factor with levels `I` `II` `III`

`Subject` a numeric vector

References

Example 11.4 in Fundamental Concepts in the Design of Experiments (3rd ed.) - Charles R. Hicks

Examples

```
data(baseball)
## maybe str(baseball) ; plot(baseball) ...
```

`EMSanova` *Calculate ANOVA table with EMS*

Description

Calculate ANOVA table with EMS for various experimental design - factorial design, nested design, mixed effect model, etc.

Usage

```
EMSanova(formula,data,type=NULL,nested=NULL,
                 level=NULL,approximate=FALSE)
```

Arguments

`formula`	model formula
`data`	data frame for ANOVA
`type`	the list of fixed/random for each factor. "F" for the fixed effect, "R" for the random effect
`nested`	the list of nested effect
`level`	list of model level
`approximate`	calculate approximated F for "TRUE"

Examples

```
data(baseball)
anova.result<-EMSanova(velocity~Group+Subject+test,data=baseball,
                type=c("F","R","F"),
                nested=c(NA,"Group",NA),
                level=c(1,1,2))
anova.result
```

EMSaovApp *Shiny App for the analysis of variance in various experimental designs*

Description

Shiny App for the analysis of variance in various experimental designs

Usage

```
EMSaovApp(nested.N=2)
```

Arguments

nested.N	number of factors of possible crossed design which can nest a factor

Examples

```
#EMSaovApp()
```

film *Dry-film thickness*

Description

Two days in a given month were randomly selected in which to run an experiment. three operators were selected at random from a large pool of available operators. The experiment consisted of measuring the dry-film thickness of varnish in mils for three different gate settings: 2, 4, and 6.

Usage

```
data("film")
```

Format

A data frame with 36 observations on the following 4 variables.

`thickness` a numeric vector

`Gate` a numeric vector

`Operator` a factor with levels `A` `B` `C`

`Day` a numeric vector

References

Fundamental Concepts in the Design of Experiments (3rd ed.) - Charles R. Hicks

Examples

```
data(film)
## maybe str(film) ; plot(film) ...
```

PooledANOVA *Pooling nonsignificant interactions to Residuals*

Description

Pooling nonsignificant interactions to Residuals

Usage

```
PooledANOVA(SS.table,del.ID)
```

Arguments

SS.table	result from EMSanova
del.ID	id's to combine sum of squares. Use rownames of SS.table

Examples

```
data(film)
anova.result<-EMSanova(thickness~Gate*Operator*Day,data=film,
                       type=c("F","R","R"))
anova.result
del.ID<-c("Gate:Day","Residuals")
PooledANOVA(anova.result,del.ID)
```

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rubber *Split-split plot design of Curerate index*

Description

A study of the cure rate index on some samples of rubber. Three laboratories, three temperatures and three types of mix were involved. Once a temperature was set, all three mixes were subjected to that temperature and then another temperature was set and again all three mixes were involved, finally the third temperature was set.

Usage

```
data("rubber")
```

Format

A data frame with 108 observations on the following 5 variables.

`cure` a numeric vector

`Rep` a factor with levels `I` `II` `III` `IV`

`Lap` a numeric vector

`Temp` a numeric vector

`Mix` a factor with levels `A` `B` `C`

References

Fundamental Concepts in the Design of Experiments (3rd ed.) - Charles R. Hicks

Examples

```
data(rubber)
## maybe str(rubber) ; plot(rubber) ...
```

Index