Package 'manta'

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Title Multivariate Asymptotic Non-Parametric Test of Association

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Description The Multivariate Asymptotic Non-parametric Test of Association (MANTA) enables non-parametric, asymptotic P-value computation for multivariate linear models. MANTA relies on the asymptotic null distribution of the PERMANOVA test statistic. P-values are computed using a highly accurate approximation of the corresponding cumulative distribution function. Garrido-Martín et al. (2022) <doi:10.1101/2022.06.06.493041>.

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Encoding UTF-8

Depends R (>= 3.3.2)

Suggests testthat

LazyData true

URL https://github.com/dgarrimar/manta

BugReports https://github.com/dgarrimar/manta/issues

RoxygenNote 7.2.3

NeedsCompilation yes

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Contents

biomarkers 2
manta 2
patients 4

Index **5**

biomarkers *Simulated Measurements of Five Disease Biomarkers*

Description

A simulated dataset containing the levels of 5 biomarkers, measured in 100 individuals, with different scales. Missing observations appear as NA.

Usage

```
data(biomarkers)
```

Format

A matrix with 100 rows and 5 numerical variables:

biomarker1 levels of biomarker1

biomarker2 levels of biomarker2

...

Author(s)

Diego Garrido-Martín

manta *Non-parametric, Asymptotic P-values for Multivariate Linear Models*

Description

Fits a multivariate linear model and computes test statistics and asymptotic P-values for predictors in a non-parametric manner.

Usage

```
manta(
  formula,
  data,
  transform = "none",
  type = "II",
  contrasts = NULL,
  subset = NULL,
  fit = FALSE
)
```

Arguments

formula	object of class "formula" (or one that can be coerced to that class): a symbolic description of the model to be fitted.
data	an optional data frame, list or environment (or object coercible by as.data.frame to a data frame) containing the variables in the model. If not found in data, the variables are taken from environment(formula), typically the environment from which manta is called.
transform	transformation of the response variables: "none", "sqrt" or "log". Default is "none".
type	type of sum of squares: "I", "II" or "III". Default is "II".
contrasts	an optional list. See contrasts.arg in model.matrix.default. Default is "contr.sum" for ordered factors and "contr.poly" for unordered factors. Note that this is different from the default setting in options("contrasts").
subset	subset of predictors for which summary statistics will be reported. Note that this is different from the "subset" argument in lm.
fit	logical. If TRUE the multivariate fit on transformed and centered responses is returned.

Details

A Y matrix is obtained after transforming (optionally) and centering the original response variables. Then, the multivariate fit obtained by lm can be used to compute sums of squares (type-I, type-II or type-III), pseudo-F statistics and asymptotic P-values for the terms specified by the formula in a non-parametric manner. The designations "type-II" and "type-III" correspond exactly to those used in Anova. "type-I" refers to sequential sums of squares.

Value

manta returns an object of class "manta", a list containing:

call	the matched call.
aov.tab	ANOVA table with Df, Sum Sq, Mean Sq, F values, partial R-squared and P-values.
type	the type of sum of squares ("I", "II" or "III").
precision	the precision in P-value computation.
transform	the transformation applied to the response variables.
na.omit	incomplete cases removed (see na.omit).
fit	if fit = TRUE the multivariate fit done on the transformed and centered response variables is also returned.

Author(s)

Diego Garrido-Martín

See Also

lm, Anova

patients *Simulated Metadata for 100 Patients*

Description

A simulated dataset containing the age, gender and disease status of 100 individuals. Missing observations appear as NA.

Usage

```
data(patients)
```

Format

A matrix with 100 rows and 3 variables:

age Age of the patient (numerical)

gender Gender of the patient (factor with levels: "male" and "female")

status Disease status of the patient (ordered factor with levels: "healthy", "mild" and "severe")

Author(s)

Diego Garrido-Martín

Index

∗ **datasets**
    biomarkers, 2
    patients, 4

Anova, *3*
as.data.frame, *3*

biomarkers, 2

class, *3*
contr.poly, *3*
contr.sum, *3*

formula, *3*

lm, *3*

manta, 2
model.matrix.default, *3*

na.omit, *3*

options, *3*

patients, 4