Package 'pGLS'

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Title Generalized Least Square in comparative Phylogenetics

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Depends MASS

Description Based on the Generalized Least Square model for comparative Phylogenetics (ref).

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NeedsCompilation no

R topics documented:

`data_fs` *Some physical characteristics of 92 species*

Description

This data set gives some measurements of ear canals (in millimeters), body mass and agility of 91 known species and 1 fossil record compiled by Tim Ryan at Penn State.

Usage

```
data_fs
```

Format

A vector containing 92 observations with one missing (FS, a hypothetical fossil record).

References

Spoor F, Garland T, Krovitz G, Ryan TM, Silcox MT, and Walker A. (2007)
The primate semicircular canal system and locomotion. *P Natl Acad Sci (USA)* 104:10808-10812.

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pGLS *An Generalized Least Square model for comparative Phylogenetics*

Description

pGLS An Generalized Least Square model for Comparative Phylogenetics

Usage

```
pGLS(formula,data,covarmatrix,na.action, intercept = TRUE)
```

Arguments

formula	a formula describing the model to be fit. Note, that an intercept is included at default.
data	the data frame including the predictors (X's) and the response (Y)
covarmatrix	the var-covariance matrix that is derived from phylogeny or other sources
na.action	a dummy term for data cleaning.
intercept	TRUE (default) if the specified model is with a intercept. It is rare to fit a such model without intercepts.

Value

A list object of class "z" containing the results of GLS fitting. The components are:

pred	fitted values and standard errors of the fitted values.
coefficients	estimated coefficients.
cov.coeff	estimated covariance matrix of the coefficients
"sigma^2"	estimated variance
pred.cond.	(for unknown species only)predicted y-values conditioning on the known species. Note if there are no unknown species present in the data, conditional prediction is not calculated.
R-Sq	fraction of total variance explained by the GLS model

Author(s)

Xianyun Mao <xianyunmao at gmai1.com> replace 1 by l.

References

Garland, T., Jr., and A. R. Ives. (2000)
Using the past to predict the present: Confidence intervals for regression equations in phylogenetic comparative methods. *American Naturalist 155:346-364.*

Martins, E. P., and T. F. Hansen. (1996)
The statistical analysis of interspecific data: a review and evaluation of comparative methods. *Pages 22-75 in E. P. Martins, ed. Phylogenies and the comparative method in animal behavior. Oxford University Press, Oxford.*

Box, G. E. P., G. M. Jenkins, and G. C. Reinsel. (1994)
Pages 282-285 Time series analysis: forecasting and control. Prentice Hall, Englewood Cliffs, N.J.

Anderson, T.W. (2003).
An Introduction to Multivariate Statistical Analysis. Wiley-Interscience; 3rd edition

Examples

```
data(pGLS)
pGLS(logAGIL~logBM+logASCR,data_fs,var_fs,na.pass)
```

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var_fs *Variance-covariance matrix of the 92 species in data_fs*

Description

This data set gives the distance matrix (variance-covariance matrix) of the 92 species in data_fs

Usage

```
var_fs
```

Format

A matrix of size 92*92.

Source

Prepared by Tim Ryan.

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