

Package ‘ITGM’

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Type Package

Title Individual Tree Growth Modeling

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Description Individual tree model is an instrument to support the decision with regard to forest management. This package provides functions that let you work with data for this model. Also other support functions and extension related to this model are available.

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LazyData TRUE

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addSettings	<i>Add Settings to list param</i>
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Description

This function assigns if the parameter does not exist or adds the parameter to the configuration. The variable assigned to the parameter is present in the last line of the script

Usage

```
addSettings(script, tipo, configuracao = NULL)
```

Arguments

script	Script is a string that contains the script
tipo	Type is one of the possibilities of parameter of evaluationVolumeAdvanced like: "models" or "graphs" or "statistics" or "save"
configuracao	Configuration is a list that contains the settings for evaluation in the function EvaluateSpecial ()

Value

list of settings

avaliaModeloEspecial *Avalia Model Special*

Description

This function is a wizard to use the functionValueValueAdvanced2 configuration: a list of configurations that will be passed as parameter to function avaliaVolumeAvancado2

Usage

avaliaModeloEspecial(configuracao)

Arguments

configuracao It is the list of settings

Value

result of avaliaVolumeAvancado2

avaliaVolumeAvancado2 *evaluates Volume Advanced*

Description

this function performs an assessment of estimates of a variable as the forcefulness with expected

Usage

```
avaliaVolumeAvancado2(
  base = NULL,
  basePredicao = NULL,
  baseProjecao = NULL,
  mapeamento = list(dap1 = "dap1", dap2 = "dap2", ht1 = "ht1", ht2 = "ht2", idade2 =
    "idadearred2", parcela = "parcela", areacorr = "areacorr"),
  modelos = NULL,
  salvar = NULL,
  graficos = NULL,
  estatisticas = NULL,
  forcePredict = F,
  dividirEm = NULL,
  percentualDeTreino = 0.7,
  agruparPor = NULL,
  fnCalculaVolume = calculaVolumeDefault,
  rmColsSuspicious = F
)
```

Arguments

base	data.frame with data in case of fragment base
basePredicao	data.frame with data to use in ajust
baseProjecao	data.frame with data to use in validation
mapeamento	name of fields on base
modelos	list of exclusive for base models
salvar	list of param to save the files
graficos	list of param to plot graphics
estatisticas	list of param to caclc estatistics
forcePredict	force the calculation without using predict?
dividirEm	how divide the base in training and validation
percentualDeTreino	how many percent will stay in the training group?
agruparPor	name field of base is group of individuals
fnCalculaVolume	list of estatistics results
rmColsSuspicious	remove fields b0, b1, b2, b2 ... of bases?

Value

will be returned a result of statistics and ranking of volume

criaModeloExclusivo2 *Create Exclusive Model for a database*

Description

this function returns a unique model is variable receive each mapeda variable ex .: criaModeloExclusivo (modeloCamposLeite, c ("age1", "age2", "bai1", "s"))

Usage

```
criaModeloExclusivo2(modeloGenerico, variaveis, palpite = NULL)
```

Arguments

modeloGenerico	model of pattern criaModeloGenerico
variaveis	list of name fields (strings) in database and model, the order of variables matter
palpite	string containing start values of function of regression

Value

will be returned a function with exclusive model

criaModeloGenerico2 *Create function with generic model*

Description

This function creates a generic model that will be a funcao that has parameters for the variables that can be mapped to each different base. her return will be a generic model that should be mapped to be used by the function avaliaEstimativas

Usage

```
criaModeloGenerico2(  
  nome,  
  formula,  
  funcaoRegressao,  
  variaveis,  
  palpito = NULL,  
  maisParametros = NULL,  
  requires = NULL  
)
```

Arguments

nome	is the name of model
formula	is the string formula begin with y2~y1
funcaoRegressao	is the function that will make the regression, ex.: 'nlsLM'
variaveis	list variables that are present in the model that are field database
palpito	param start of funcaoRegressao
maisParametros	string add in funcaoRegressao, ex lm(y2~y1, data=base, maisParametros)
requires	list of string of packges used to work with funcaoRegressao

Value

will be returned function with generic model to map to a base

firstsMeasurements *First Measurements per Group*

Description

this function generates a field "primeiraMedicao" that contains the lowest age for each item in the group both derived from dtFrame

Usage

```
firstsMeasurements(dtFrame, group = "parcela", age = "idadearred")
```

Arguments

dtFrame	It is the database that contains the data
group	is the field that represents the groups default parcela
age	default idadearred is the name of field containing the values of the group

Value

data.frame dtFrame with the field "primeiraMedicao"

Examples

```
dtf = data.frame(
  grupo = c(1,2,3,4,1,2,3,4),
  medicoes= c(10,20,30,40,5,30,1,52))
firstsMeasurements(dtf, group = "grupo", age = "medicoes")
```

getAllEstadisticsFn *Get All Functions of Statistics of ITGM*

Description

this function allows you to obtain all functions available in ITGM for model evaluation.

Usage

```
getAllEstadisticsFn()
```

Value

collection of functions statistics

getAllGraphicsFn	<i>Get All Functions of Graphics of ITGM</i>
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Description

this function allows you to obtain all functions available in ITGM for model evaluation.

Usage

```
getAllGraphicsFn()
```

Value

collection of functions graphics

getggplot2GraphicObservadoXEstimadoTotal	<i>Get ggplot2 Grapic observed versus estimated of Total</i>
--	--

Description

this function displays/saves/returns a Graphical ggplot2 illustrating the difference between the observed and estimated

Usage

```
getggplot2GraphicObservadoXEstimadoTotal(  
  titulo = "observadoXestimado",  
  nome = "observadoXestimado",  
  observado,  
  estimado,  
  identificadorIndividual = NULL,  
  identificadorGrupal = NULL,  
  showTestF = TRUE,  
  TestFposition = 4,  
  titleIdentificadorGrupal = NULL,  
  save = NULL,  
  labsX = "observado",  
  labsy = "estimado",  
  nomeParaExibir = NULL,  
  environ = 1,  
  extensao = ".png",  
  desc = NULL,  
  data = NULL,  
  mapeamento = list(idade2 = "idadearred2", parcela = "parcela", areacorr = "areacorr"),  
  ...  
)
```

Arguments

titulo	is the title graphic
nome	name of file case save
observado	list containing the observations of variable
estimado	list containing estimates of variable
identificadorIndividual	list containing 'id' of individuals
identificadorGrupal	list containing group of individuals
showTestF	draw results of test F in graphic?
TestFposition	show one of the four corners of the graph clockwise
titleIdentificadorGrupal	title of Legend of the groups
save	If you want to save enter the directory as a string
labsX	label x
labsy	label y
nomeParaExibir	This is the name to display the graph as a function after the completion of this
environ	environment in which the function to display the ggplot2 must be saved
extensao	type of image that will be saved
desc	description of plot geted from avaliavolumeavancado
data	database to retireve fields to id
mapeamento	name of fields on base
...	only for compatibility with other functions

Value

will be returned the graphical generated by ggplot2

getGraphicVolumeTotal *Get rbokeh grapic observed versus estimated*

Description

this function displays/saves/returns a Graphical rbokeh illustrating the difference between the observed and estimated

Usage

```
getGraphicVolumeTotal(  
  titulo = "observadoXestimado",  
  nome = "observadoXestimado",  
  observado,  
  estimado,  
  showTestF = TRUE,  
  save = NULL,  
  labsX = "observado",  
  labsy = "estimado",  
  vetorial = T,  
  desc = NULL,  
  data = NULL,  
  mapeamento = list(idade2 = "idadearred2", parcela = "parcela", areacorr = "areacorr"),  
  ...  
)
```

Arguments

titulo	is the title graphic
nome	name of file case save
observado	list containing the observations of variable
estimado	list containing estimates of variable
showTestF	draw results of test F in graphic?
save	If you want to save enter the directory as a string
labsX	label x
labsy	label y
vetorial	save picture in vector type? (Default TRUE)
desc	description of plot geted from avaliavolumeavancado
data	database to retireve fields to id
mapeamento	name of fields on base
...	optionals params to plot graphic in ITGM

Value

will be returned a rbokeh graphic

getModelosLiteraturaExclusivos
get Models Literature Exclusives

Description

This function creates and returns an array with the usual models mapped to the mapping vector

Usage

```
getModelosLiteraturaExclusivos(mapeamento = c("idade1", "idade2", "bai1", "s"))
```

Arguments

mapeamento list of names fields of database will work "idade1", "idade2", "bai1", "s"

Value

will be returned list of function with exclusive model

getModelosLiteraturaGenericos
get Generic Model Literature

Description

This function creates and returns an array with the usual models of literature

Usage

```
getModelosLiteraturaGenericos()
```

Value

will be returned list of models generic

`getModelsExclusiveOfLiterature`
get Models Literature Exclusives

Description

This function creates and returns an array with the usual models mapped to the mapping vector

Usage

```
getModelsExclusiveOfLiterature(mapper = c("idade1", "idade2", "bai1", "s"))
```

Arguments

mapper list of names fields of database will work "idade1", "idade2", "bai1", "s"

Value

will be returned list of function with exclusive model

`getModelsGenericOfLiterature`
get Generic Model Literature

Description

This function creates and returns an array with the usual models of literature

Usage

```
getModelsGenericOfLiterature()
```

Value

will be returned list of models generic

 maiTOMdd

Individual Tree Model to Diameter Distribution Model

Description

this function add fields to returned base "inventario" in order to make it usable for diameter distribution models

Usage

```
maiTOMdd(
  projeto,
  talhao,
  parcela,
  fila,
  cova,
  fuste,
  idade,
  dap,
  volume,
  espacamento,
  amplitude = 1,
  verbose = FALSE
)
```

Arguments

projeto	is the field that contains the cod project of individuals
talhao	is the field that contains the cod of project subdivision
parcela	is the field that contains the cod of talhao subdivision
fila	is the field that contains the cod row where the tree is
cova	is the field that contains the cod pit where the tree is
fuste	is the field that contains the cod shaft of tree
idade	is the field that contains the age of individuals the observation
dap	is the field that contains the diameter of individuals the observation
volume	is the field that contains the volume of individuals the observation
espacamento	is the field that contains the distance in METROS between one and another individual for ex.:c("3 x 3", "3,3 x 3", ...
amplitude	default 1 is the amplitude of diameter classes
verbose	use TRUE to status presentation

Value

data.table what is "inventario" with some added fields

 plotRB

Get rbokeh graphic observed versus estimated

Description

this function displays/saves/returns a Graphical rbokeh illustrating the difference between the observed and estimated

Usage

```
plotRB(
  titulo = "observadoXestimado",
  nome = "observadoXestimado",
  observado,
  estimado,
  id = NULL,
  save = NULL,
  labsX = "observado",
  labsy = "estimado",
  showTestF = TRUE,
  colID = "idLabel",
  sobnome = "ObservadoXEstimado",
  data = NULL,
  diretorio = NULL,
  datadiretorio = NULL,
  HTTPS = FALSE,
  totalizar = NULL,
  campoID = NULL,
  mapeamento = list(idade2 = "idadearred2", parcela = "parcela", areacorr = "areacorr"),
  ...
)
```

Arguments

titulo	is the title graphic
nome	name of file case save
observado	list containing the observations of variable
estimado	list containing estimates of variable
id	list containing 'id' of individuals
save	If you want to save enter the directory as a string
labsX	label x
labsy	label y
showTestF	draw results of test F in graphic?
colID	label of ids

sobnome	optional name to append of file name graphic
data	database to retireve fields to id
diretorio	database to retireve fields to id
datadiretorio	optional abstract path of directory
HTTPS	script in https?
totalizar	generat graphic of volume total
campoID	name of parcela field in data
mapeamento	name of fields on base
...	optionals params to plot graphic in ITGM

Value

will be returned a rbokeh graphic

preparaFormula *Prepare formula*

Description

this function prepare formula to use in models

Usage

```
preparaFormula(formula)
```

Arguments

formula It is the string formula to use in modelo

Value

formula handled

project	<i>Project Volume based in Ages</i>
---------	-------------------------------------

Description

this function provides a list of volume projections in a future age or from one to another future age

Usage

```
project(
  firstAge = NaN,
  lastAge,
  fitDAP,
  fitHT,
  base,
  mapper = list(age1 = "idade1", age2 = "idade2", dap1 = "dap1", dap2 = "dap2", ht1 =
    "ht1", ht2 = "ht2"),
  calcVolume = calculaVolumeDefault,
  withoutBaseFields = F
)
```

Arguments

firstAge	early age. if only one age use NaN
lastAge	late age for project or the age at which one wants to get the volume
fitDAP	an adjustment of the return type of a function lm() from dap
fitHT	an adjustment of the return type of a function lm() from ht
base	a dataset to project
mapper	the mapping for the name of the old fields age, dap and ht in base
calcVolume	function to calc volume based base, dap e ht, default calculaVolumeDefault of Fgmutils
withoutBaseFields	want returned projected volume no contains the fields of the base? default no

removeColsSuspicious	<i>Create function with generic model</i>
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Description

This function creates a generic model that will be a funcao that has parameters for the variables that can be mapped to each different base. her return will be a generic model that should be mapped to be used by the function avaliaEstimativas

Usage

```
removeColsSuspicious(base, colsRm)
```

Arguments

base is the data with fields to remove
 colsRm is the collections of name fields suspicious to remove of base

Value

will be returned function with generic model to map to a base

runAndReport	<i>Evaluate avaliation and report result</i>
--------------	--

Description

This function tries to execute the script and stores the result of the execution in a report script is a string that contains the script in R to be executed report is the file to be saved with the report the function saves a file in the local directory with report name, Which is a JSON relatory.

Usage

```
runAndReport(script, report, environment, showWarnings = F)
```

Arguments

script It is the script to evaluate
 report is the name of file to save reports
 environment the environment to evaluate script
 showWarnings show thrown warnings?

Value

will be returned implicit var

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