

Package ‘quantregForest’

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Type Package

Title Quantile Regression Forests

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Depends randomForest

Imports stats, graphics, grDevices

Description Quantile Regression Forests is a tree-based ensemble method for estimation of conditional quantiles. It is particularly well suited for high-dimensional data. Predictor variables of mixed classes can be handled. The package is dependent on the package randomForests, written by Andy Liaw.

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URL <http://www.stats.ox.ac.uk/~meinshau/>

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NeedsCompilation yes

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`predict.quantregForest`*predict method for class quantregForest*

Description

Prediction of test data with Quantile Regression Forests

Usage

```
## S3 method for class 'quantregForest'  
predict(object, newdata = NULL, quantiles =  
c(0.1, 0.5, 0.9), ...)
```

Arguments

<code>object</code>	An object of class <code>quantregForest</code>
<code>newdata</code>	A data frame or matrix containing new data. If not given, the out-of-bag prediction in <code>object</code> is returned
<code>quantiles</code>	A vector of quantiles (with numerical values in $[0,1]$) for which the quantile estimates should be returned
<code>...</code>	Further arguments (not in use in the current version)

Value

A matrix. The first column contains the conditional quantile estimates for the first entry in the vector `quantiles`, the second column contains the estimates for the second entry of `quantiles` and so on.

Author(s)

Nicolai Meinshausen

References

N. Meinshausen (2006) "Quantile Regression Forests", Journal of Machine Learning Research 7, 983-999 <http://jmlr.csail.mit.edu/papers/v7/>

See Also

[quantregForest](#) for fitting Quantile Regression Forests

quantregForest *Quantile Regression Forests*

Description

Quantile Regression Forests infer conditional quantile functions from data

Usage

```
quantregForest(x, y, mtry = ceiling(ncol(x)/3), nodesize = 10, ntree = 1000)
```

Arguments

x	A matrix or data.frame containing the predictor variables
y	The response variable; a numerical vector
mtry	The number of variables to try for each split; same default setting as for Random Forests
nodesize	The minimal number of instances in each terminal node; the default setting is slightly higher than for Random Forests
ntree	The number of trees to be grown

Details

It might be useful to try various values of mtry and see which one works best; however, results are typically not heavily dependent on this parameter.

Value

A value of class quantregForest, for which print, plot, and predict methods are available.

Author(s)

Nicolai Meinshausen

References

N. Meinshausen (2006) "Quantile Regression Forests", Journal of Machine Learning Research 7, 983-999 <http://jmlr.csail.mit.edu/papers/v7/>

See Also

For prediction, see [predict.quantregForest](#)

Examples

```
#####  
## Load air-quality data (and preprocessing) ##  
#####  
  
data(airquality)  
set.seed(1)  
  
## remove observations with missing values  
airquality <- airquality[ !apply(is.na(airquality), 1,any), ]  
  
## number of remaining samples  
n <- nrow(airquality)  
  
## divide into training and test data  
indextrain <- sample(1:n,round(0.6*n),replace=FALSE)  
Xtrain <- airquality[ indextrain,2:6]  
Xtest <- airquality[-indextrain,2:6]  
Ytrain <- airquality[ indextrain,1]  
Ytest <- airquality[-indextrain,1]  
  
#####  
## compute Quantile Regression Forests ##  
#####  
  
qrf <- quantregForest(x=Xtrain, y=Ytrain)  
  
## plot out-of-bag predictions for the training data  
plot(qrf)  
  
## compute out-of-bag predictions  
quant.outofbag <- predict(qrf)  
  
## predict test data  
quant.newdata <- predict(qrf, newdata= Xtest)
```

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