

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.stat.berkeley.edu/~nicolai>

Repository CRAN

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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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