# Assignment 18

Use the below given data set

DataSet

Perform the below given activities:

a. Create classification model using different decision trees.

b. Verify model goodness of fit.

c. Apply all the model validation techniques.

d. Make conclusions

library(C50)

data(churn)

head(churnTrain)

head(churnTest)

#------------

library(tree)

fit <-tree(churn~.,data=churnTrain[,-1])

summary(fit)

fit

plot(fit)

text(fit)

pred <-predict(fit,churnTest[,-1],type='class')

confusionMatrix(pred,churnTest$churn)

#----

library(rpart)

fit1 <- rpart(churn~.,data=churnTrain[,-1])

fit1

summary(fit1)

# make predictions

pred <- predict(fit1,churnTest[,-1],type='class')

confusionMatrix(pred,churnTest$churn)

rpart.plot::rpart.plot(fit1)

#------------

# load libraries

library(caret)

library(rpart)

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="rpart")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix

#---------------

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="C5.0")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix

#---------------

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="bstTree")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix

#---------------

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="C5.0Cost")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix

#---------------

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="C5.0Rules")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix

#---------------

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="C5.0Tree")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix

#---------------

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="ctree")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix

#---------------

# define training control

train\_control<- trainControl(method="cv", number=10)

# train the model

model<- train(churn~., data=churnTrain, trControl=train\_control, method="ctree2")

model

# make predictions

predictions<- predict(model,churnTest)

# append predictions

pred<- cbind(churnTest,predictions)

# summarize results

confusionMatrix<- confusionMatrix(pred$predictions,pred$churn)

confusionMatrix