Lista de Comandos

library(caret)

library(RSNNS)

library(mlbench)

df <- read.csv("http://www.razer.net.br/datasets/Volumes.csv", sep = ";", dec = ",")

data("Satellite")

df$NR <- NULL

set.seed(7)

indices <- createDataPartition(df$VOL, p=0.80, list=FALSE)

treino <- df[indices,]

teste <- df[-indices,]

indices <- createDataPartition(Satellite$classes, p=0.8, list=FALSE)

treino <- Satellite[indices, c(17,18,19,20,37)]

teste <- Satellite[-indices, c(17,18,19,20,37)]

rf <- train(VOL~., data=treino, method="rf")

svm <- train(VOL~., data=treino, method="svmRadial")

rna <- train(VOL~., data=treino, method="nnet")

rf <- train(classes~., data=treino, method="rf")

svm <- train(classes~., data=treino, method="svmRadial")

rna <- train(classes~., data=treino, method="nnet", trace=FALSE)

alom <- nls(VOL ~ b0 + b1*DAP*DAP\*HT, df, start=list(b0=0.5, b1=0.5))

predicoes.svm <- predict(svm, teste)

predicoes.rf <- predict(rf, teste)

predicoes.rna <- predict(rna, teste)

predicoes.alom <- predict(alom, teste)

predict.rf <- predict(rf, teste)

predict.svm <- predict(svm, teste)

predict.rna <- predict(rna, teste)

coefR2 <- function(y\_real, y\_pred){ residual <- sum((y\_real - y\_pred)^2) total <- sum((y\_real - mean(y\_real))^2) r2 <- 1 - (residual / total) return(r2) }

coefSYX <- function(y\_real, y\_pred, percent=FALSE){ n <- length(y\_real) residual <- sum((y\_real - y\_pred)^2) syx <- sqrt(residual / (n-2)) if(percent){ syx <- (syx / mean(y\_real)) \* 100 } return(syx) }

result.rf.r2 <- coefR2(teste$VOL, predicoes.rf)

result.rf.syx <- coefSYX(teste$VOL, predicoes.rf)

result.rf.syxPerc <- coefSYX(teste$VOL, predicoes.rf, percent=TRUE)

result.svm.r2 <- coefR2(teste$VOL, predicoes.svm)

result.svm.syx <- coefSYX(teste$VOL, predicoes.svm)

result.svm.syxPerc <- coefSYX(teste$VOL, predicoes.svm, percent=TRUE)

result.rna.r2 <- coefR2(teste$VOL, predicoes.rna)

result.rna.syx <- coefSYX(teste$VOL, predicoes.rna)

result.rna.syxPerc <- coefSYX(teste$VOL, predicoes.rna, percent=TRUE)

result.alom.r2 <- coefR2(teste$VOL, predicoes.alom)

result.alom.syx <- coefSYX(teste$VOL, predicoes.alom)

result.alom.syxPerc <- coefSYX(teste$VOL, predicoes.alom, percent=TRUE)

cat("RF-> R²:", result.rf.r2, "Syx:", result.rf.syx, "Syx%", result.rf.syxPerc, "\n")

cat("SVM-> R²:", result.svm.r2, "Syx:", result.svm.syx, "Syx%", result.svm.syxPerc, "\n")

cat("RNA-> R²:", result.rna.r2, "Syx:", result.rna.syx, "Syx%", result.rna.syxPerc, "\n")

cat("Alométrico-> R²:", result.alom.r2, "Syx:", result.alom.syx, "Syx%", result.alom.syxPerc, "\n")

print(confusionMatrix(predict.rf, teste$classes))

print(confusionMatrix(predict.svm, teste$classes))

print(confusionMatrix(predict.rna, teste$classes))