```
#Linear Support Vector Machine
library(caret)
library(kernlab) y=as.matrix(read.table("uspscl.txt"))
x=as.matrix(read.table("uspsdata.txt"))
myd=data.frame(x,y)
head(myd)
set.seed(1234)
intrain=createDataPartition(y=myd$V1.1, p=0.66, list=FALSE)
grid=expand.grid(C=c(0.1,0.5,1,1.5,5,5.5,10,10.5))
training=myd[intrain,] testing=myd[-intrain,]
training[["V1.1"]]=factor(training[["V1.1"]])
trctrl=trainControl(method="repeatedcv", number=10, repeats=3)
svm_Linear=train(V1.1~., data=training, method="svmLinear",
trControl=trctrl, preProcess=c("center","scale"), tuneGrid=grid,
tuneLength=10 )
svm_Linear_plot(svm_Linear)
test_svm_Linear=predict(svm_Linear, newdata=testing)
confusionMatrix(test_svm_Linear, testing$V1.1)
plot(test_svm_Linear)

#Nonlinear Support Vector Machine
library(caret)
library(kernlab)
y=as.matrix(read.table("uspscl.txt"))
x=as.matrix(read.table("uspsdata.txt"))
myd=data.frame(x,y) head(myd)
set.seed(1234)
grid_radial=expand.grid(sigma=c(0.1,0.5,1,1.5,5,5.5,10,10.5),C=c(0.1,0
.5,1,1.5,5,5.5,10,10.5))
svm_nonLinear=train(V1.1~., data=training, method="svmRadial",
trControl=trctrl, preProcess=c("center","scale"),
tuneGrid=grid_radial, tuneLength=10)
svm_nonLinear_plot(svm_nonLinear)
test_svm_nonLinear=predict(svm_nonLinear, newdata=testing)
confusionMatrix(test_svm_nonLinear, testing$V1.1)
```