

WLE_SVM_classification.R

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```
setwd("C:/Users/Seshan/Desktop/sv R related/acadgild/assignments/session17")
library(readr)
WLE<- read.csv("WLE.csv",header=T, na.strings=c("", "NA"))
View(WLE)
dim(WLE)

## [1] 4024 158

library(kernlab)
WLE_train<-WLE[1:3950,]
WLE_test<-WLE[3951:4024,]
names(WLE)

## [1] "user_name" "raw_timestamp_part_1"
## [3] "raw_timestamp_part_2" "cvtd_timestamp"
## [5] "new_window" "num_window"
## [7] "roll_belt" "pitch_belt"
## [9] "yaw_belt" "total_accel_belt"
## [11] "kurtosis_roll_belt" "kurtosis_pitch_belt"
## [13] "skewness_roll_belt" "skewness_roll_belt.1"
## [15] "max_roll_belt" "max_pitch_belt"
## [17] "max_yaw_belt" "min_roll_belt"
## [19] "min_pitch_belt" "min_yaw_belt"
## [21] "amplitude_roll_belt" "amplitude_pitch_belt"
## [23] "amplitude_yaw_belt" "var_total_accel_belt"
## [25] "avg_roll_belt" "stddev_roll_belt"
## [27] "var_roll_belt" "avg_pitch_belt"
## [29] "stddev_pitch_belt" "var_pitch_belt"
## [31] "avg_yaw_belt" "stddev_yaw_belt"
## [33] "var_yaw_belt" "gyros_belt_x"
## [35] "gyros_belt_y" "gyros_belt_z"
## [37] "accel_belt_x" "accel_belt_y"
## [39] "accel_belt_z" "magnet_belt_x"
## [41] "magnet_belt_y" "magnet_belt_z"
## [43] "roll_arm" "pitch_arm"
## [45] "yaw_arm" "total_accel_arm"
## [47] "var_accel_arm" "avg_roll_arm"
## [49] "stddev_roll_arm" "var_roll_arm"
## [51] "avg_pitch_arm" "stddev_pitch_arm"
## [53] "var_pitch_arm" "avg_yaw_arm"
## [55] "stddev_yaw_arm" "var_yaw_arm"
## [57] "gyros_arm_x" "gyros_arm_y"
```

## [59]	"gyros_arm_z"	"accel_arm_x"
## [61]	"accel_arm_y"	"accel_arm_z"
## [63]	"magnet_arm_x"	"magnet_arm_y"
## [65]	"magnet_arm_z"	"kurtosis_roll_arm"
## [67]	"kurtosis_pitch_arm"	"kurtosis_yaw_arm"
## [69]	"skewness_roll_arm"	"skewness_pitch_arm"
## [71]	"skewness_yaw_arm"	"max_roll_arm"
## [73]	"max_pitch_arm"	"max_yaw_arm"
## [75]	"min_roll_arm"	"min_pitch_arm"
## [77]	"min_yaw_arm"	"amplitude_roll_arm"
## [79]	"amplitude_pitch_arm"	"amplitude_yaw_arm"
## [81]	"roll_dumbbell"	"pitch_dumbbell"
## [83]	"yaw_dumbbell"	"kurtosis_roll_dumbbell"
## [85]	"kurtosis_pitch_dumbbell"	"skewness_roll_dumbbell"
## [87]	"skewness_pitch_dumbbell"	"max_roll_dumbbell"
## [89]	"max_pitch_dumbbell"	"max_yaw_dumbbell"
## [91]	"min_roll_dumbbell"	"min_pitch_dumbbell"
## [93]	"min_yaw_dumbbell"	"amplitude_roll_dumbbell"
## [95]	"amplitude_pitch_dumbbell"	"amplitude_yaw_dumbbell"
## [97]	"total_accel_dumbbell"	"var_accel_dumbbell"
## [99]	"avg_roll_dumbbell"	"stddev_roll_dumbbell"
## [101]	"var_roll_dumbbell"	"avg_pitch_dumbbell"
## [103]	"stddev_pitch_dumbbell"	"var_pitch_dumbbell"
## [105]	"avg_yaw_dumbbell"	"stddev_yaw_dumbbell"
## [107]	"var_yaw_dumbbell"	"gyros_dumbbell_x"
## [109]	"gyros_dumbbell_y"	"gyros_dumbbell_z"
## [111]	"accel_dumbbell_x"	"accel_dumbbell_y"
## [113]	"accel_dumbbell_z"	"magnet_dumbbell_x"
## [115]	"magnet_dumbbell_y"	"magnet_dumbbell_z"
## [117]	"roll_forearm"	"pitch_forearm"
## [119]	"yaw_forearm"	"kurtosis_roll_forearm"
## [121]	"kurtosis_pitch_forearm"	"skewness_roll_forearm"
## [123]	"skewness_pitch_forearm"	"max_roll_forearm"
## [125]	"max_pitch_forearm"	"max_yaw_forearm"
## [127]	"min_roll_forearm"	"min_pitch_forearm"
## [129]	"min_yaw_forearm"	"amplitude_roll_forearm"
## [131]	"amplitude_pitch_forearm"	"amplitude_yaw_forearm"
## [133]	"total_accel_forearm"	"var_accel_forearm"
## [135]	"avg_roll_forearm"	"stddev_roll_forearm"
## [137]	"var_roll_forearm"	"avg_pitch_forearm"
## [139]	"stddev_pitch_forearm"	"var_pitch_forearm"
## [141]	"avg_yaw_forearm"	"stddev_yaw_forearm"
## [143]	"var_yaw_forearm"	"gyros_forearm_x"
## [145]	"gyros_forearm_y"	"gyros_forearm_z"
## [147]	"accel_forearm_x"	"accel_forearm_y"
## [149]	"accel_forearm_z"	"magnet_forearm_x"
## [151]	"magnet_forearm_y"	"magnet_forearm_z"
## [153]	"accel_forearm_y.1"	"accel_forearm_z.1"
## [155]	"magnet_forearm_x.1"	"magnet_forearm_y.1"
## [157]	"magnet_forearm_z.1"	"classe"

```

WLE_classifier<-ksvm(classe~.,data=WLE_train, kernel="vanilladot")

## Setting default kernel parameters

## Warning in .local(x, ...): Variable(s) ``' constant. Cannot scale data.

WLE_classifier

## Support Vector Machine object of class "ksvm"
##
## SV type: C-svc (classification)
## parameter : cost C = 1
##
## Linear (vanilla) kernel function.
##
## Number of Support Vectors : 3316
##
## Objective Function Value : -8.018326e+15 -6.023753e+13 -1.55818e+15 -6.339
44e+15 -4.264044e+13 -8.099278e+14 -4.066632e+15 -3.432538e+13 -3.432538e+13
-1.199172e+15
## Training error : 0.552405

WLE_prediction<-predict(WLE_classifier,WLE_test)
head(WLE_prediction)

## [1] A A A A A A
## Levels: A B C D E

table(WLE_prediction,WLE_test$classe)

##
## WLE_prediction  A  B  C  D  E
##                A  0  0 74  0  0
##                B  0  0  0  0  0
##                C  0  0  0  0  0
##                D  0  0  0  0  0
##                E  0  0  0  0  0

WLE_prediction

## [1] A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A
## [36] A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A
## [71] A A A A
## Levels: A B C D E

Agreement<-WLE_prediction ==WLE_test$classe
prop.table(table(Agreement))

## Agreement
## FALSE
##      1

```

```
set.seed(12345)
WLE_classifier_rbf<-ksvm(classe~.,data=WLE_train, kernel ="rbfdot")

## Warning in .local(x, ...): Variable(s) ``' constant. Cannot scale data.

WLE_prediction_rbf<-predict(WLE_classifier_rbf,WLE_test)
Agreement_rbf<-WLE_prediction_rbf==WLE_test$classe
table(Agreement_rbf)

## Agreement_rbf
## FALSE
##      74

prop.table(table(Agreement_rbf))

## Agreement_rbf
## FALSE
##      1
```