**WLE\_SVM\_classification.R**

setwd("C:/Users/krish/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\_picth\_belt"

## [13] "skewness\_roll\_belt" "skewness\_roll\_belt.1"

## [15] "max\_roll\_belt" "max\_picth\_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\_picth\_arm" "kurtosis\_yaw\_arm"

## [69] "skewness\_roll\_arm" "skewness\_pitch\_arm"

## [71] "skewness\_yaw\_arm" "max\_roll\_arm"

## [73] "max\_picth\_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\_picth\_dumbbell" "skewness\_roll\_dumbbell"

## [87] "skewness\_pitch\_dumbbell" "max\_roll\_dumbbell"

## [89] "max\_picth\_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\_picth\_forearm" "skewness\_roll\_forearm"

## [123] "skewness\_pitch\_forearm" "max\_roll\_forearm"

## [125] "max\_picth\_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