**WLE\_SVM\_classification.R**

# Seshan

Thu Aug 09 19:42:34 2018

|  |  |  |  |
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| **setwd**("C:/Users/Shraddha/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