**WLE\_SVM\_classification.R**

Ashish Saxena

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| --- | --- | --- | --- |
| **setwd**("C:/Users/Khushboo/Desktop") | | |  |
| **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") | | -6.339  3.432538e+13    A A A A A A A A A A | |
| ## 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 44e+15 -4.264044e+13 -8.099278e+14 -4.066632e+15 -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**$**classe)  ##  ## WLE\_prediction A B C D E  ## A 0 0 74 0 0  ## B 0 0 0 0 0  ## C 0 0 0 0 0  ## D 0 0 0 0 0  ## E 0 0 0 0 0  WLE\_prediction  ## [1] A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A A ## [36] A A A A A A A A A A A A A A A A A A A A A A A A A  ## [71] A A A A  ## Levels: A B C D E  Agreement<-WLE\_prediction **==**WLE\_test**$**classe **prop.table**(**table**(Agreement))  ## Agreement  ## FALSE  ## 1 | |
| **set.seed**(12345) | -**ksvm**(classe**~**.,data=WLE\_train, kernel ="rbfdot")  g in .local(x, ...): Variable(s) `' constant. Cannot scale data.  -**predict**(WLE\_classifier\_rbf,WLE\_test)  WLE\_prediction\_rbf**==**WLE\_test**$**classe  )    (Agreement\_rbf)) | | |
| WLE\_classifier\_rbf< ## Warnin  WLE\_prediction\_rbf< Agreement\_rbf<**table**( Agreement\_rbf  ## Agreement\_rbf  ## FALSE ## 74 **prop.table**( **table**  ## Agreement\_rbf  ## FALSE  ## 1 |