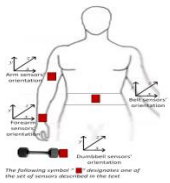


Session 17 Assignment

Weight Lifting Exercise

This human activity recognition research has traditionally focused on discriminating between different activities, i.e. to predict "which" activity was performed at a specific point in time (like with the Daily Living Activities dataset above). The approach we propose for the Weight Lifting Exercises dataset is to investigate "how (well)" an activity was performed by the wearer. The "how (well)" investigation has only received little attention so far, even though it potentially provides useful information for a large variety of applications, such as sports training.

2. Perform the below given activities:
a. Create classification model using logistic regression model
b. verify model goodness of fit
c. Report the accuracy measures
d. Report the variable importance
e. Report the unimportant variables
f. Interpret the results
g. Visualize the results

```
setwd("C:/Users/Seshan/Desktop/sv R related/acadgild/assignments/session17")

library(readr)

Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1 <-
read.csv("Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1.csv",header=
T,na.strings=c(""))

View(Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1)
```

```
View(Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1)

data<-Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1

#Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1 <-
read.csv("Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1.csv",header=
T,na.strings=c(""))

#data<-s <-
read.csv("Example_WearableComputing_weight_lifting_exercises_biceps_curl_variations1.csv",header=
T,na.strings=c(""))

View(data)


# load libraries

library(caret)

library(randomForest)

library(rpart)

library(rpart.plot)

library(ggplot2)

library(lattice)

library(rattle)

summary(data)

library(C50)

#install.package('devtools') # Only needed if you dont have this installed.

library(devtools)

install_github('adam-m-mcelhinney/helpRFunctions')

library(helpRFunctions)

names(data)

dim(data)

library(caret)
```

```
library(zoo)
library(plyr)
is.na(data)
which(is.na(data))
sum(is.na(data))
colSums(is.na(data))
data[is.na(data)] <- mean(data, na.rm = TRUE)
str(data)
summary(data)
pairs(data[8:15])



# set last (classe) and prior (- classe) column index
last <- as.numeric(ncol(data))
prior <- last - 1
# set variables to numerics for correlation check, except the "classe"
for (i in 1:prior) {
  data[,i] <- as.numeric(data[,i])}


# enable multi-core processing
library(doParallel)
#cl <- makeCluster(detectCores())
registerDoParallel()
set.seed(12345)
dataTrain<-data[1:4004,]
```

```
dataTest<-data[4005:4024,]

cor.check <- cor(dataTrain[, -c(last)])

diag(cor.check) <- 0

plot( levelplot(cor.check,main ="Correlation matrix for all WLE features in training set",

            scales=list(x=list(rot=90), cex=1.0) ))


# logistic regression model:

fit <- glm(classe~.,data = dataTrain,family = binomial(link='logit'))

summary(fit)


library(MASS)

step_fit <- stepAIC(fit,method='backward')

summary(step_fit)

confint(step_fit)

#ANOVA on base model

anova(fit,test = 'Chisq')


#ANOVA from reduced model after applying the Step AIC

anova(step_fit,test = 'Chisq')


#plot the fitted model

plot(fit$fitted.values)


pred_link <- predict(fit,newdata = dataTest,type = 'link')
```

```
#check for multicollinearity
library(car)
vif(fit)
vif(step_fit)

library(caret)
#with default prob cut 0.50
dataTest$pred_classe <- ifelse(pred<0.7,'yes','no')

table(dataTest$pred_classe,dataTest$classe)

#training split of churn classes
round(table(dataTrain$classe)/nrow(dataTrain),2)*100
# test split of churn classes
round(table(dataTest$classe)/nrow(dataTest),2)*100
#predicted split of churn classes
round(table(dataTest$pred_classe)/nrow(dataTest),2)*100

#create confusion matrix
confusionMatrix(dataTest$classe,dataTest$classe)

#how do we create a cross validation scheme
control <- trainControl(method = 'repeatedcv',
                        number = 10,
                        repeats = 3)
```

```
seed <-7
metric <- 'Accuracy'
set.seed(seed)
fit_default <- train(classe~.,
                     data = dataTrain,
                     method = 'glm',
                     metric = 0,
                     trControl = control)
print(fit_default)

library(caret)
varImp(step_fit)
varImp(fit_default)
library(devtools)

install_github("riv","tomasgreif")

install_github("woe","tomasgreif")

library(woe)

library(riv)

iv_df <- iv.mult(dataTrain, y="classe", summary=TRUE, verbose=TRUE)
iv_df
```

```
iv <- iv.mult(dataTrain, y="classe", summary=FALSE, verbose=TRUE)

# Plot information value summary


iv.plot.summary(iv_df)
```

```
-0.1697 :   1    -0.08596:   1     -0.10319:   1      -0.00863:   1
 -0.20332:   1    -0.1009 :   1     -0.14513:   1      -0.05777:   1
  max_roll_arm      max_picth_arm       max_yaw_arm       min_roll_arm
 Min.   :-36.3000   Min.   :-164.000   Min.   : 0.0000   Min.   :-87.1000
 1st Qu.:  0.0000   1st Qu.:   0.000   1st Qu.: 0.0000   1st Qu.:  0.0000
 Median :  0.0000   Median :   0.000   Median : 0.0000   Median :  0.0000
 Mean   :  0.2127   Mean   :   1.232   Mean   : 0.8345   Mean   : -0.6085
 3rd Qu.:  0.0000   3rd Qu.:   0.000   3rd Qu.: 0.0000   3rd Qu.:  0.0000
 Max.   : 81.4000   Max.   : 180.000   Max.   :59.0000   Max.   : 35.7000
 min_pitch_arm       min_yaw_arm      amplitude_roll_arm
 Min.   :-180.000   Min.   : 0.0000   Min.   : 0.0000
 1st Qu.:   0.000   1st Qu.: 0.0000   1st Qu.: 0.0000
 Median :   0.000   Median : 0.0000   Median : 0.0000
 Mean   :  -1.213   Mean   : 0.2806   Mean   : 0.8211
 3rd Qu.:   0.000   3rd Qu.: 0.0000   3rd Qu.: 0.0000
 Max.   : 146.000   Max.   :34.0000   Max.   :90.0000
 amplitude_pitch_arm amplitude_yaw_arm roll_dumbbell      pitch_dumbbell
 Min.   :  0.000     Min.   : 0.0000   Min.   :-152.782   Min.   :-134.73
 1st Qu.:  0.000     1st Qu.: 0.0000   1st Qu.: -34.657   1st Qu.: -12.93
 Median :  0.000     Median : 0.0000   Median :  -2.295   Median :  14.48
 Mean   :  2.445     Mean   : 0.5539   Mean   :   3.500   Mean   :   5.18
 3rd Qu.:  0.000     3rd Qu.: 0.0000   3rd Qu.:  58.014   3rd Qu.:  27.95
 Max.   :360.000     Max.   :52.0000   Max.   : 139.729   Max.   :  97.28
  yaw_dumbbell     kurtosis_roll_dumbbell kurtosis_picth_dumbbell
 Min.   :-129.33   Min.   :-2.088900      Min.   :-2.088900
 1st Qu.:  21.35   1st Qu.: 0.000000      1st Qu.: 0.000000
 Median :  72.49   Median : 0.000000      Median : 0.000000
 Mean   :  55.66   Mean   : 0.007174      Mean   : 0.001251
 3rd Qu.: 122.01   3rd Qu.: 0.000000      3rd Qu.: 0.000000
 Max.   : 152.92   Max.   : 7.563300      Max.   :11.273400
 kurtosis_yaw_dumbbell skewness_roll_dumbbell skewness_pitch_dumbbell
 #DIV/0!:  88          Min.   :-2.6110000     Min.   :-2.050100
 0      :3936          1st Qu.: 0.0000000     1st Qu.: 0.000000
                       Median : 0.0000000     Median : 0.000000
                       Mean   : 0.0003258     Mean   :-0.001974
                       3rd Qu.: 0.0000000     3rd Qu.: 0.000000
                       Max.   : 2.3814000     Max.   : 2.783200
 skewness_yaw_dumbbell max_roll_dumbbell  max_picth_dumbbell
 #DIV/0!:  88          Min.   :-70.9000   Min.   :-84.500
 0      :3936          1st Qu.:  0.0000   1st Qu.:  0.000
                       Median :  0.0000   Median :  0.000
```

```
                     Mean   :  0.7494   Mean   :  1.927
                     3rd Qu.:  0.0000   3rd Qu.:  0.000
                     Max.   : 97.3000   Max.   :152.900
max_yaw_dumbbell    min_roll_dumbbell   min_pitch_dumbbell
Min.   :-2.100000   Min.   :-134.7000   Min.   :-129.3000
1st Qu.: 0.000000   1st Qu.:   0.0000   1st Qu.:   0.0000
Median : 0.000000   Median :   0.0000   Median :   0.0000
Mean   : 0.007232   Mean   :  -0.6017   Mean   :   0.3381
3rd Qu.: 0.000000   3rd Qu.:   0.0000   3rd Qu.:   0.0000
Max.   : 7.600000   Max.   :  26.8000   Max.   : 122.9000
min_yaw_dumbbell    amplitude_roll_dumbbell amplitude_pitch_dumbbell
Min.   :-2.100000   Min.   :  0.000         Min.   :  0.000
1st Qu.: 0.000000   1st Qu.:  0.000         1st Qu.:  0.000
Median : 0.000000   Median :  0.000         Median :  0.000
Mean   : 0.007232   Mean   :  1.351         Mean   :  1.589
3rd Qu.: 0.000000   3rd Qu.:  0.000         3rd Qu.:  0.000
Max.   : 7.600000   Max.   :171.750         Max.   :217.330
amplitude_yaw_dumbbell total_accel_dumbbell var_accel_dumbbell
Min.   :0              Min.   : 1.00        Min.   :  0.0000
1st Qu.:0              1st Qu.: 6.00        1st Qu.:  0.0000
Median :0              Median : 9.00        Median :  0.0000
Mean   :0              Mean   :12.02        Mean   :  0.2074
3rd Qu.:0              3rd Qu.:14.00        3rd Qu.:  0.0000
Max.   :0              Max.   :37.00        Max.   :230.4278
avg_roll_dumbbell    stddev_roll_dumbbell var_roll_dumbbell
Min.   :-110.93280   Min.   :  0.0000     Min.   :    0.00
1st Qu.:   0.00000   1st Qu.:  0.0000     1st Qu.:    0.00
Median :   0.00000   Median :  0.0000     Median :    0.00
Mean   :   0.05821   Mean   :  0.5755     Mean   :   29.73
3rd Qu.:   0.00000   3rd Qu.:  0.0000     3rd Qu.:    0.00
Max.   : 117.40360   Max.   :103.1239     Max.   :10634.53
avg_pitch_dumbbell  stddev_pitch_dumbbell var_pitch_dumbbell
Min.   :-70.91580   Min.   : 0.0000       Min.   :   0.000
1st Qu.:  0.00000   1st Qu.: 0.0000       1st Qu.:   0.000
Median :  0.00000   Median : 0.0000       Median :   0.000
Mean   :  0.07618   Mean   : 0.3323       Mean   :   7.486
3rd Qu.:  0.00000   3rd Qu.: 0.0000       3rd Qu.:   0.000
Max.   : 57.45260   Max.   :48.4298       Max.   :2345.441
avg_yaw_dumbbell   stddev_yaw_dumbbell var_yaw_dumbbell  gyros_dumbbell_x
Min.   :-105.650   Min.   : 0.0000     Min.   :   0.00   Min.   :-1.4300
1st Qu.:   0.000   1st Qu.: 0.0000     1st Qu.:   0.00   1st Qu.:-0.0200
Median :   0.000   Median : 0.0000     Median :   0.00   Median : 0.3200
Mean   :   1.117   Mean   : 0.4127     Mean   :  12.65   Mean   : 0.2487
3rd Qu.:   0.000   3rd Qu.: 0.0000     3rd Qu.:   0.00   3rd Qu.: 0.5300
Max.   : 129.933   Max.   :71.0596     Max.   :5049.47   Max.   : 1.4800
gyros_dumbbell_y   gyros_dumbbell_z  accel_dumbbell_x   accel_dumbbell_y
Min.   :-2.04000   Min.   :-1.4600   Min.   :-237.000   Min.   :-163.00
1st Qu.:-0.27000   1st Qu.:-0.3300   1st Qu.:  -6.000   1st Qu.: -28.00
Median :-0.06000   Median :-0.1300   Median :  11.000   Median :  -2.00
Mean   :-0.04674   Mean   :-0.1337   Mean   :  -7.091   Mean   :  12.83
3rd Qu.: 0.14000   3rd Qu.: 0.0500   3rd Qu.:  23.000   3rd Qu.:  47.00
Max.   : 4.37000   Max.   : 1.8900   Max.   : 217.000   Max.   : 281.00
accel_dumbbell_z  magnet_dumbbell_x magnet_dumbbell_y magnet_dumbbell_z
Min.   :-273.00   Min.   :-638.00   Min.   :-730.0    Min.   :-262.00
1st Qu.:  12.00   1st Qu.:-515.00   1st Qu.:-544.0    1st Qu.:-101.00
Median :  51.00   Median : 107.50   Median :-486.0    Median : -59.00
Mean   :  16.63   Mean   :  10.55   Mean   :-115.7    Mean   : -41.12
```

```
3rd Qu.:  79.00   3rd Qu.: 506.00   3rd Qu.: 304.0    3rd Qu.:   1.00
Max.   : 122.00   Max.   : 579.00   Max.   : 618.0    Max.   : 300.00
 roll_forearm    pitch_forearm     yaw_forearm      kurtosis_roll_forearm
Min.   :-180.0   Min.   :-64.00   Min.   :-180.00   0      :3936
1st Qu.:-115.0   1st Qu.:  0.00   1st Qu.:-106.00   #DIV/0!:   8
Median :  89.5   Median : 19.70   Median :  83.50   -1.3846:   2
Mean   :  36.1   Mean   : 18.57   Mean   :  17.79   -0.0699:   1
3rd Qu.: 136.0   3rd Qu.: 43.90   3rd Qu.: 108.00   -0.0781:   1
Max.   : 180.0   Max.   : 86.90   Max.   : 180.00   -0.1168:   1
kurtosis_picth_forearm kurtosis_yaw_forearm skewness_roll_forearm
0      :3936           #DIV/0!:  88         0      :3936
#DIV/0!:   8           0      :3936         #DIV/0!:   8
-0.0259:   1                                -0.009 :   1
-0.0918:   1                                -0.011 :   1
-0.1289:   1                                -0.0252:   1
-0.1574:   1                                -0.0525:   1
skewness_pitch_forearm skewness_yaw_forearm max_roll_forearm
0      :3937           #DIV/0!:  88         Min.   :-63.9000
#DIV/0!:   8           0      :3936         1st Qu.:  0.0000
-0.0428:   1                                Median :  0.0000
-0.0673:   1                                Mean   :  0.7345
-0.0732:   1                                3rd Qu.:  0.0000
-0.14  :   1                                Max.   : 86.9000
max_picth_forearm  max_yaw_forearm min_roll_forearm    min_pitch_forearm
Min.   :-152.000   0      :3937    Min.   :-64.00000   Min.   :-180.00
1st Qu.:   0.000   -1.3   :  14    1st Qu.:  0.00000   1st Qu.:   0.00
Median :   0.000   #DIV/0!:   8    Median :  0.00000   Median :   0.00
Mean   :   2.445   -1.5   :   6    Mean   :  0.06573   Mean   :  -1.79
3rd Qu.:   0.000   -0.7   :   5    3rd Qu.:  0.00000   3rd Qu.:   0.00
Max.   : 180.000   -0.9   :   5    Max.   : 47.50000   Max.   : 125.00
min_yaw_forearm amplitude_roll_forearm amplitude_pitch_forearm
0      :3937    Min.   : 0.0000        Min.   :  0.000
-1.3   :  14    1st Qu.: 0.0000        1st Qu.:  0.000
#DIV/0!:   8    Median : 0.0000        Median :  0.000
-1.5   :   6    Mean   : 0.6687        Mean   :  4.235
-0.7   :   5    3rd Qu.: 0.0000        3rd Qu.:  0.000
-0.9   :   5    Max.   :77.1000        Max.   :359.000
amplitude_yaw_forearm total_accel_forearm var_accel_forearm
#DIV/0!:   8          Min.   :10.00       Min.   :  0.0000
0      :4016          1st Qu.:30.00       1st Qu.:  0.0000
                      Median :35.00       Median :  0.0000
                      Mean   :34.38       Mean   :  0.6562
                      3rd Qu.:37.00       3rd Qu.:  0.0000
                      Max.   :59.00       Max.   :124.1778
avg_roll_forearm    stddev_roll_forearm var_roll_forearm
Min.   :-145.1395   Min.   :  0.000     Min.   :    0.0
1st Qu.:   0.0000   1st Qu.:  0.000     1st Qu.:    0.0
Median :   0.0000   Median :  0.000     Median :    0.0
Mean   :   0.8809   Mean   :  1.482     Mean   :  199.9
3rd Qu.:   0.0000   3rd Qu.:  0.000     3rd Qu.:    0.0
Max.   : 151.2500   Max.   :176.478     Max.   :31144.6
avg_pitch_forearm  stddev_pitch_forearm var_pitch_forearm
Min.   :-63.9000   Min.   : 0.0000      Min.   :  0.000
1st Qu.:  0.0000   1st Qu.: 0.0000      1st Qu.:  0.000
Median :  0.0000   Median : 0.0000      Median :  0.000
Mean   :  0.3827   Mean   : 0.2087      Mean   :  3.371
3rd Qu.:  0.0000   3rd Qu.: 0.0000      3rd Qu.:  0.000
```

```
 Max.   : 68.1682   Max.   :26.7293      Max.   :714.453
 avg_yaw_forearm     stddev_yaw_forearm var_yaw_forearm   gyros_forearm_x
 Min.   :-152.3333   Min.   :  0.000    Min.   :    0.0   Min.   :-1.8800
 1st Qu.:   0.0000   1st Qu.:  0.000    1st Qu.:    0.0   1st Qu.:-0.1400
 Median :   0.0000   Median :  0.000    Median :    0.0   Median : 0.0600
 Mean   :   0.4121   Mean   :  1.354    Mean   :  157.2   Mean   : 0.1076
 3rd Qu.:   0.0000   3rd Qu.:  0.000    3rd Qu.:    0.0   3rd Qu.: 0.4200
 Max.   : 132.5854   Max.   :197.508    Max.   :39009.3   Max.   : 1.8100
 gyros_forearm_y     gyros_forearm_z    accel_forearm_x
 Min.   :-5.730000   Min.   :-2.58000   Min.   :-328.000
 1st Qu.:-1.780000   1st Qu.:-0.31000   1st Qu.:-117.000
 Median :-0.020000   Median :-0.02000   Median :  -6.000
 Mean   :-0.004108   Mean   : 0.09302   Mean   :  -6.445
 3rd Qu.: 1.830000   3rd Qu.: 0.48000   3rd Qu.: 113.000
 Max.   : 5.170000   Max.   : 3.35000   Max.   : 279.000
 accel_forearm_y   accel_forearm_z magnet_forearm_x  magnet_forearm_y
 Min.   :-467.00   Min.   :-366    Min.   :-1160.0   Min.   :-725.0
 1st Qu.:  75.75   1st Qu.:-210    1st Qu.: -589.0   1st Qu.: -76.0
 Median : 229.50   Median :-181    Median : -330.5   Median : 653.0
 Mean   : 171.47   Mean   :-163    Mean   : -348.7   Mean   : 358.6
 3rd Qu.: 297.00   3rd Qu.:-150    3rd Qu.: -152.0   3rd Qu.: 747.0
 Max.   : 575.00   Max.   : 239    Max.   :  413.0   Max.   :1440.0
 magnet_forearm_z classe
 Min.   :-876.0   A:1365
 1st Qu.: 370.8   B: 901
 Median : 560.0   C: 112
 Mean   : 475.2   D: 276
 3rd Qu.: 670.0   E:1370
 Max.   :1040.0
 [ reached getOption("max.print") -- omitted 1 row ]
> pairs(data[8:15])
> # set last (classe) and prior (- classe) column index
> last <- as.numeric(ncol(data))
> prior <- last - 1
> # set variables to numerics for correlation check, except the "classe"
> for (i in 1:prior) {
+   data[,i] <- as.numeric(data[,i])}
>
> # enable multi-core processing
> library(doParallel)
Loading required package: foreach
Loading required package: iterators
Loading required package: parallel
> #cl <- makeCluster(detectCores())
> registerDoParallel()
> set.seed(12345)
> dataTrain<-data[1:4004,]
> dataTest<-data[4005:4024,]
> cor.check <- cor(dataTrain[, -c(last)])
Warning message:
In cor(dataTrain[, -c(last)]) : the standard deviation is zero
> diag(cor.check) <- 0
> plot( levelplot(cor.check,main ="Correlation matrix for all WLE features in
training set",
+                 scales=list(x=list(rot=90), cex=1.0) ))
> # logistic regression model:
> fit <- glm(classe~.,data = dataTrain,family = binomial(link='logit'))
```

```
Warning messages:
1: In drawDetails(x, recording = FALSE) : reached elapsed time limit
2: glm.fit: algorithm did not converge
3: glm.fit: fitted probabilities numerically 0 or 1 occurred
> summary(fit)

Call:
glm(formula = classe ~ ., family = binomial(link = "logit"),
    data = dataTrain)

Deviance Residuals:
       Min          1Q      Median          3Q         Max
-3.063e-04  -2.000e-08   2.000e-08   2.000e-08   3.324e-04

Coefficients: (14 not defined because of singularities)
                         Estimate Std. Error z value Pr(>|z|)
(Intercept)              4.576e+05  1.230e+09   0.000    1.000
user_name               -5.210e+01  1.849e+05   0.000    1.000
raw_timestamp_part_1    -3.450e-04  9.293e-01   0.000    1.000
raw_timestamp_part_2     1.045e-05  2.451e-02   0.000    1.000
cvtd_timestamp          -2.202e+01  8.060e+04   0.000    1.000
new_window              -7.584e+02  6.402e+06   0.000    1.000
num_window               6.767e+00  3.520e+03   0.002    0.998
roll_belt                8.705e-01  3.350e+03   0.000    1.000
pitch_belt               3.321e+00  5.762e+03   0.001    1.000
yaw_belt                 9.784e-02  9.781e+02   0.000    1.000
total_accel_belt        -4.044e+00  1.389e+04   0.000    1.000
kurtosis_roll_belt       1.507e+03  2.120e+07   0.000    1.000
kurtosis_picth_belt     -3.102e+00  4.225e+04   0.000    1.000
kurtosis_yaw_belt               NA         NA      NA       NA
skewness_roll_belt       6.595e+01  6.259e+05   0.000    1.000
skewness_roll_belt.1     7.315e-01  1.152e+04   0.000    1.000
skewness_yaw_belt               NA         NA      NA       NA
max_roll_belt           -2.531e+02  6.233e+06   0.000    1.000
max_picth_belt          -3.091e+01  4.399e+05   0.000    1.000
max_yaw_belt            -1.502e+03  2.121e+07   0.000    1.000
min_roll_belt            2.082e+02  5.222e+06   0.000    1.000
min_pitch_belt           9.599e+01  8.100e+05   0.000    1.000
min_yaw_belt                    NA         NA      NA       NA
amplitude_roll_belt      3.149e+02  5.852e+06   0.000    1.000
amplitude_pitch_belt            NA         NA      NA       NA
amplitude_yaw_belt              NA         NA      NA       NA
var_total_accel_belt     8.926e+01  9.288e+05   0.000    1.000
avg_roll_belt           -7.727e-01  4.312e+04   0.000    1.000
stddev_roll_belt        -9.439e+01  1.708e+06   0.000    1.000
var_roll_belt            6.176e+00  1.642e+05   0.000    1.000
avg_pitch_belt          -1.398e+01  1.418e+05   0.000    1.000
stddev_pitch_belt        2.683e+02  2.000e+06   0.000    1.000
var_pitch_belt          -9.808e+01  6.833e+05   0.000    1.000
avg_yaw_belt             3.630e+01  1.475e+06   0.000    1.000
stddev_yaw_belt         -2.057e+02  2.243e+06   0.000    1.000
var_yaw_belt             1.584e-01  5.367e+03   0.000    1.000
gyros_belt_x             1.753e+00  1.607e+05   0.000    1.000
gyros_belt_y             2.195e+02  4.206e+05   0.001    1.000
gyros_belt_z            -2.904e+01  1.310e+05   0.000    1.000
accel_belt_x             3.496e-01  1.758e+03   0.000    1.000
accel_belt_y             7.420e-01  2.353e+03   0.000    1.000
```

accel_belt_z	-2.403e-02	2.343e+03	0.000	1.000
magnet_belt_x	3.766e-01	7.941e+02	0.000	1.000
magnet_belt_y	1.431e-01	1.516e+03	0.000	1.000
magnet_belt_z	3.060e-01	6.958e+02	0.000	1.000
roll_arm	-2.981e-02	1.211e+02	0.000	1.000
pitch_arm	-8.005e-01	8.714e+02	-0.001	0.999
yaw_arm	-7.708e-03	1.841e+02	0.000	1.000
total_accel_arm	-4.613e-01	2.165e+03	0.000	1.000
var_accel_arm	2.124e+00	1.331e+04	0.000	1.000
avg_roll_arm	-3.244e-02	6.289e+03	0.000	1.000
stddev_roll_arm	-2.489e+00	4.218e+04	0.000	1.000
var_roll_arm	6.343e-03	2.574e+02	0.000	1.000
avg_pitch_arm	-8.205e+00	1.062e+05	0.000	1.000
stddev_pitch_arm	-3.290e+01	3.973e+05	0.000	1.000
var_pitch_arm	2.911e-01	3.677e+03	0.000	1.000
avg_yaw_arm	-2.145e+00	1.631e+04	0.000	1.000
stddev_yaw_arm	-4.885e+00	5.553e+04	0.000	1.000
var_yaw_arm	1.409e-02	3.264e+02	0.000	1.000
gyros_arm_x	-6.674e+00	2.568e+04	0.000	1.000
gyros_arm_y	-1.575e+01	5.820e+04	0.000	1.000
gyros_arm_z	1.132e+01	2.980e+04	0.000	1.000
accel_arm_x	-2.149e-01	5.207e+02	0.000	1.000
accel_arm_y	6.879e-01	7.116e+02	0.001	0.999
accel_arm_z	-2.381e-01	3.828e+02	-0.001	1.000
magnet_arm_x	-5.615e-02	1.698e+02	0.000	1.000
magnet_arm_y	-3.838e-01	4.520e+02	-0.001	0.999
magnet_arm_z	6.498e-02	2.805e+02	0.000	1.000
kurtosis_roll_arm	2.298e+00	1.475e+04	0.000	1.000
kurtosis_picth_arm	-2.025e-02	9.916e+03	0.000	1.000
kurtosis_yaw_arm	-1.043e+00	1.703e+04	0.000	1.000
skewness_roll_arm	-9.194e-01	1.852e+04	0.000	1.000
skewness_pitch_arm	-1.525e+00	2.065e+04	0.000	1.000
skewness_yaw_arm	-4.074e-01	1.177e+04	0.000	1.000
max_roll_arm	8.219e+02	2.250e+07	0.000	1.000
max_picth_arm	-5.548e+02	2.652e+07	0.000	1.000
max_yaw_arm	-7.559e+00	9.583e+04	0.000	1.000
min_roll_arm	-8.105e+02	2.244e+07	0.000	1.000
min_pitch_arm	5.575e+02	2.652e+07	0.000	1.000
min_yaw_arm	1.055e+01	9.002e+04	0.000	1.000
amplitude_roll_arm	-8.030e+02	2.238e+07	0.000	1.000
amplitude_pitch_arm	5.576e+02	2.652e+07	0.000	1.000
amplitude_yaw_arm	NA	NA	NA	NA
roll_dumbbell	3.117e-01	6.437e+02	0.000	1.000
pitch_dumbbell	-6.753e-01	1.728e+03	0.000	1.000
yaw_dumbbell	1.263e-01	4.711e+02	0.000	1.000
kurtosis_roll_dumbbell	1.012e+02	9.264e+06	0.000	1.000
kurtosis_picth_dumbbell	-8.040e-01	1.266e+05	0.000	1.000
kurtosis_yaw_dumbbell	NA	NA	NA	NA
skewness_roll_dumbbell	-8.218e+01	9.959e+05	0.000	1.000
skewness_pitch_dumbbell	-6.297e+01	7.874e+05	0.000	1.000
skewness_yaw_dumbbell	NA	NA	NA	NA
max_roll_dumbbell	1.122e+03	9.951e+06	0.000	1.000
max_picth_dumbbell	-2.243e+02	4.617e+06	0.000	1.000
max_yaw_dumbbell	-8.495e+01	9.121e+06	0.000	1.000
min_roll_dumbbell	-1.114e+03	9.887e+06	0.000	1.000
min_pitch_dumbbell	2.223e+02	4.614e+06	0.000	1.000
min_yaw_dumbbell	NA	NA	NA	NA

amplitude_roll_dumbbell	-1.119e+03	9.932e+06	0.000	1.000
amplitude_pitch_dumbbell	2.190e+02	4.642e+06	0.000	1.000
amplitude_yaw_dumbbell	NA	NA	NA	NA
total_accel_dumbbell	2.634e+00	8.124e+03	0.000	1.000
var_accel_dumbbell	9.387e-01	1.293e+04	0.000	1.000
avg_roll_dumbbell	3.209e-01	1.170e+04	0.000	1.000
stddev_roll_dumbbell	3.826e+00	1.714e+05	0.000	1.000
var_roll_dumbbell	-6.532e-03	1.294e+03	0.000	1.000
avg_pitch_dumbbell	-9.252e+00	9.790e+04	0.000	1.000
stddev_pitch_dumbbell	7.252e+00	2.285e+05	0.000	1.000
var_pitch_dumbbell	-8.990e-02	3.544e+03	0.000	1.000
avg_yaw_dumbbell	2.326e+00	3.002e+04	0.000	1.000
stddev_yaw_dumbbell	8.080e+00	1.707e+05	0.000	1.000
var_yaw_dumbbell	-1.969e-02	1.225e+03	0.000	1.000
gyros_dumbbell_x	-2.620e+00	5.656e+04	0.000	1.000
gyros_dumbbell_y	2.166e+00	3.581e+04	0.000	1.000
gyros_dumbbell_z	1.283e+01	5.726e+04	0.000	1.000
accel_dumbbell_x	7.158e-01	1.706e+03	0.000	1.000
accel_dumbbell_y	-2.493e-01	9.631e+02	0.000	1.000
accel_dumbbell_z	-2.423e-01	1.084e+03	0.000	1.000
magnet_dumbbell_x	-1.128e-01	3.596e+02	0.000	1.000
magnet_dumbbell_y	-2.477e-02	5.858e+02	0.000	1.000
magnet_dumbbell_z	2.711e-03	7.102e+02	0.000	1.000
roll_forearm	-7.360e-03	1.904e+02	0.000	1.000
pitch_forearm	9.473e-01	1.582e+03	0.001	1.000
yaw_forearm	4.287e-02	1.896e+02	0.000	1.000
kurtosis_roll_forearm	7.332e+00	1.101e+05	0.000	1.000
kurtosis_picth_forearm	6.396e-01	1.035e+04	0.000	1.000
kurtosis_yaw_forearm	NA	NA	NA	NA
skewness_roll_forearm	5.414e-01	2.195e+04	0.000	1.000
skewness_pitch_forearm	6.050e-01	1.714e+04	0.000	1.000
skewness_yaw_forearm	NA	NA	NA	NA
max_roll_forearm	7.359e+02	5.512e+06	0.000	1.000
max_picth_forearm	-7.005e-01	1.555e+04	0.000	1.000
max_yaw_forearm	-3.109e+01	4.583e+05	0.000	1.000
min_roll_forearm	-7.347e+02	5.555e+06	0.000	1.000
min_pitch_forearm	-1.021e+00	7.942e+03	0.000	1.000
min_yaw_forearm	NA	NA	NA	NA
amplitude_roll_forearm	-7.491e+02	5.527e+06	0.000	1.000
amplitude_pitch_forearm	NA	NA	NA	NA
amplitude_yaw_forearm	-1.610e+02	1.679e+06	0.000	1.000
total_accel_forearm	8.335e-01	5.021e+03	0.000	1.000
var_accel_forearm	-9.501e-01	1.683e+04	0.000	1.000
avg_roll_forearm	-3.053e+00	3.370e+04	0.000	1.000
stddev_roll_forearm	-9.505e-01	3.371e+04	0.000	1.000
var_roll_forearm	9.389e-03	2.038e+02	0.000	1.000
avg_pitch_forearm	-2.479e+00	1.298e+05	0.000	1.000
stddev_pitch_forearm	6.353e+01	3.663e+05	0.000	1.000
var_pitch_forearm	-1.023e+00	7.995e+03	0.000	1.000
avg_yaw_forearm	3.378e+00	4.000e+04	0.000	1.000
stddev_yaw_forearm	-4.433e+00	8.123e+04	0.000	1.000
var_yaw_forearm	2.646e-02	3.863e+02	0.000	1.000
gyros_forearm_x	1.456e+01	5.911e+04	0.000	1.000
gyros_forearm_y	-6.460e+00	1.369e+04	0.000	1.000
gyros_forearm_z	2.089e+01	3.623e+04	0.001	1.000
accel_forearm_x	-1.600e-01	3.288e+02	0.000	1.000
accel_forearm_y	-2.062e-01	5.004e+02	0.000	1.000

```
accel_forearm_z          -2.349e-01  5.413e+02   0.000    1.000
magnet_forearm_x          1.437e-01  1.610e+02   0.001    0.999
magnet_forearm_y          1.355e-02  1.972e+02   0.000    1.000
magnet_forearm_z          1.891e-01  1.861e+02   0.001    0.999

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 5.1382e+03  on 4003  degrees of freedom
Residual deviance: 3.3492e-07  on 3859  degrees of freedom
AIC: 290

Number of Fisher Scoring iterations: 25

> library(MASS)
> step_fit <- stepAIC(fit,method='backward')
Start:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + skewness_yaw_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + min_yaw_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + amplitude_yaw_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + kurtosis_yaw_forearm +
    skewness_roll_forearm + skewness_pitch_forearm + skewness_yaw_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + min_yaw_forearm +
```

```
    amplitude_roll_forearm + amplitude_pitch_forearm + amplitude_yaw_forearm
+
    total_accel_forearm + var_accel_forearm + avg_roll_forearm +
    stddev_roll_forearm + var_roll_forearm + avg_pitch_forearm +
    stddev_pitch_forearm + var_pitch_forearm + avg_yaw_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + skewness_yaw_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + min_yaw_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + amplitude_yaw_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + kurtosis_yaw_forearm +
    skewness_roll_forearm + skewness_pitch_forearm + skewness_yaw_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + min_yaw_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
```

```
    magnet_forearm_y + magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + skewness_yaw_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + min_yaw_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + amplitude_yaw_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + kurtosis_yaw_forearm +
    skewness_roll_forearm + skewness_pitch_forearm + skewness_yaw_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
```

```
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + skewness_yaw_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + min_yaw_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + amplitude_yaw_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + kurtosis_yaw_forearm +
    skewness_roll_forearm + skewness_pitch_forearm + max_roll_forearm +
    max_picth_forearm + max_yaw_forearm + min_roll_forearm +
    min_pitch_forearm + amplitude_roll_forearm + amplitude_yaw_forearm +
    total_accel_forearm + var_accel_forearm + avg_roll_forearm +
    stddev_roll_forearm + var_roll_forearm + avg_pitch_forearm +
    stddev_pitch_forearm + var_pitch_forearm + avg_yaw_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
```

```
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + skewness_yaw_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + min_yaw_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + amplitude_yaw_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
```

```
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + skewness_yaw_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + min_yaw_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + var_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    roll_forearm + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + skewness_yaw_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_accel_dumbbell + avg_roll_dumbbell +
```

```
    stddev_roll_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    stddev_pitch_dumbbell + var_pitch_dumbbell + avg_yaw_dumbbell +
    stddev_yaw_dumbbell + var_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + roll_forearm + pitch_forearm +
    yaw_forearm + kurtosis_roll_forearm + kurtosis_picth_forearm +
    skewness_roll_forearm + skewness_pitch_forearm + max_roll_forearm +
    max_picth_forearm + max_yaw_forearm + min_roll_forearm +
    min_pitch_forearm + amplitude_roll_forearm + amplitude_yaw_forearm +
    total_accel_forearm + var_accel_forearm + avg_roll_forearm +
    stddev_roll_forearm + var_roll_forearm + avg_pitch_forearm +
    stddev_pitch_forearm + var_pitch_forearm + avg_yaw_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + kurtosis_yaw_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
```

```
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + amplitude_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + var_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    roll_forearm + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z


Step:  AIC=290
```

```
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + amplitude_yaw_belt + var_total_accel_belt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + var_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    roll_forearm + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    amplitude_pitch_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + avg_yaw_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
```

```
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + var_roll_arm +
    avg_pitch_arm + stddev_pitch_arm + var_pitch_arm + avg_yaw_arm +
    stddev_yaw_arm + var_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + kurtosis_picth_arm +
    kurtosis_yaw_arm + skewness_roll_arm + skewness_pitch_arm +
    skewness_yaw_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_pitch_arm + min_yaw_arm + amplitude_roll_arm +
    amplitude_pitch_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    kurtosis_roll_dumbbell + kurtosis_picth_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + min_yaw_belt + amplitude_roll_belt +
    var_total_accel_belt + avg_roll_belt + stddev_roll_belt +
    var_roll_belt + avg_pitch_belt + stddev_pitch_belt + var_pitch_belt +
    avg_yaw_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_picth_arm + kurtosis_yaw_arm
+
    skewness_roll_arm + skewness_pitch_arm + skewness_yaw_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
```

```
    min_pitch_arm + min_yaw_arm + amplitude_roll_arm + amplitude_pitch_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + var_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    roll_forearm + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z


Step:  AIC=290
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    yaw_belt + total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    kurtosis_yaw_belt + skewness_roll_belt + skewness_roll_belt.1 +
    skewness_yaw_belt + max_roll_belt + max_picth_belt + max_yaw_belt +
    min_roll_belt + min_pitch_belt + amplitude_roll_belt + var_total_accel_be
lt +
    avg_roll_belt + stddev_roll_belt + var_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + avg_yaw_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    kurtosis_picth_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + var_yaw_dumbbell +
```

```
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    roll_forearm + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z



- cvtd_timestamp            1 3.4004e-07 288
- accel_belt_y              1 3.4021e-07 288
- accel_dumbbell_x          1 3.4092e-07 288
- raw_timestamp_part_2      1 3.4122e-07 288
- accel_forearm_y           1 3.4157e-07 288
- magnet_belt_z             1 3.4178e-07 288
- accel_forearm_x           1 3.4188e-07 288
- pitch_dumbbell            1 3.4196e-07 288
- gyros_forearm_y           1 3.4250e-07 288
- gyros_belt_y              1 3.4270e-07 288
- raw_timestamp_part_1      1 3.4273e-07 288
- pitch_forearm             1 3.4273e-07 288
- roll_dumbbell             1 3.4287e-07 288
- accel_forearm_z           1 3.4324e-07 288
- accel_arm_x               1 3.4466e-07 288
- gyros_forearm_z           1 3.4786e-07 288
- accel_arm_z               1 3.5030e-07 288
- magnet_forearm_x          1 3.5500e-07 288
- magnet_forearm_z          1 3.6029e-07 288
- magnet_arm_y              1 3.6940e-07 288
- accel_arm_y               1 3.7901e-07 288
- pitch_arm                 1 4.1144e-07 288
- num_window                1 5.9629e-07 288
- pitch_belt                1 1.0195e-06 288
<none>                        3.3492e-07 290

Step:  AIC=288
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + avg_yaw_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + var_roll_arm +
```

```
    avg_pitch_arm + stddev_pitch_arm + var_pitch_arm + avg_yaw_arm +
    stddev_yaw_arm + var_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + kurtosis_picth_arm +
    kurtosis_yaw_arm + skewness_roll_arm + skewness_pitch_arm +
    skewness_yaw_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_pitch_arm + min_yaw_arm + amplitude_roll_arm +
    amplitude_pitch_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    kurtosis_roll_dumbbell + kurtosis_picth_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + roll_forearm + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- roll_forearm             1 3.3393e-07 286
- kurtosis_picth_arm       1 3.3418e-07 286
- var_yaw_dumbbell         1 3.3420e-07 286
- var_roll_dumbbell        1 3.3420e-07 286
- kurtosis_roll_dumbbell   1 3.3420e-07 286
- max_yaw_dumbbell         1 3.3420e-07 286
- stddev_roll_dumbbell     1 3.3420e-07 286
- stddev_yaw_dumbbell      1 3.3420e-07 286
- skewness_roll_forearm    1 3.3420e-07 286
- var_pitch_dumbbell       1 3.3421e-07 286
- var_yaw_arm              1 3.3421e-07 286
- avg_roll_belt            1 3.3421e-07 286
- avg_roll_dumbbell        1 3.3421e-07 286
- avg_roll_arm             1 3.3421e-07 286
- amplitude_roll_arm       1 3.3422e-07 286
- min_roll_arm             1 3.3422e-07 286
- max_roll_arm             1 3.3422e-07 286
- avg_pitch_forearm        1 3.3422e-07 286
- skewness_roll_arm        1 3.3422e-07 286
- var_roll_belt            1 3.3422e-07 286
- skewness_pitch_forearm   1 3.3423e-07 286
- stddev_roll_belt         1 3.3423e-07 286
- stddev_pitch_dumbbell    1 3.3423e-07 286
- skewness_roll_belt.1     1 3.3423e-07 286
```

- kurtosis_roll_forearm   1 3.3423e-07 286
- skewness_pitch_dumbbell   1 3.3424e-07 286
- min_roll_belt   1 3.3424e-07 286
- max_yaw_forearm   1 3.3424e-07 286
- max_roll_belt   1 3.3424e-07 286
- max_picth_belt   1 3.3424e-07 286
- kurtosis_picth_belt   1 3.3424e-07 286
- max_picth_arm   1 3.3424e-07 286
- avg_yaw_belt   1 3.3424e-07 286
- min_pitch_arm   1 3.3424e-07 286
- amplitude_pitch_arm   1 3.3424e-07 286
- avg_pitch_arm   1 3.3424e-07 286
- gyros_dumbbell_y   1 3.3424e-07 286
- var_yaw_belt   1 3.3424e-07 286
- kurtosis_yaw_arm   1 3.3425e-07 286
- max_yaw_belt   1 3.3425e-07 286
- kurtosis_roll_belt   1 3.3425e-07 286
- skewness_yaw_arm   1 3.3425e-07 286
- kurtosis_picth_dumbbell   1 3.3425e-07 286
- stddev_pitch_arm   1 3.3425e-07 286
- skewness_pitch_arm   1 3.3425e-07 286
- amplitude_roll_belt   1 3.3426e-07 286
- max_picth_forearm   1 3.3426e-07 286
- amplitude_pitch_dumbbell 1 3.3426e-07 286
- var_roll_arm   1 3.3426e-07 286
- min_pitch_dumbbell   1 3.3426e-07 286
- max_picth_dumbbell   1 3.3426e-07 286
- stddev_yaw_forearm   1 3.3426e-07 286
- avg_pitch_belt   1 3.3427e-07 286
- kurtosis_picth_forearm   1 3.3427e-07 286
- skewness_roll_dumbbell   1 3.3427e-07 286
- var_total_accel_belt   1 3.3427e-07 286
- new_window   1 3.3427e-07 286
- avg_yaw_forearm   1 3.3427e-07 286
- avg_roll_forearm   1 3.3427e-07 286
- stddev_yaw_arm   1 3.3428e-07 286
- var_pitch_arm   1 3.3428e-07 286
- var_yaw_forearm   1 3.3428e-07 286
- skewness_roll_belt   1 3.3428e-07 286
- stddev_yaw_belt   1 3.3428e-07 286
- avg_yaw_dumbbell   1 3.3428e-07 286
- stddev_roll_arm   1 3.3429e-07 286
- var_accel_forearm   1 3.3429e-07 286
- var_accel_dumbbell   1 3.3429e-07 286
- min_pitch_belt   1 3.3430e-07 286
- magnet_dumbbell_y   1 3.3430e-07 286
- stddev_roll_forearm   1 3.3430e-07 286
- var_roll_forearm   1 3.3431e-07 286
- avg_pitch_dumbbell   1 3.3431e-07 286
- amplitude_roll_dumbbell   1 3.3431e-07 286
- min_roll_dumbbell   1 3.3431e-07 286
- max_roll_dumbbell   1 3.3431e-07 286
- amplitude_yaw_forearm   1 3.3432e-07 286
- max_yaw_arm   1 3.3432e-07 286
- stddev_pitch_belt   1 3.3433e-07 286
- kurtosis_roll_arm   1 3.3433e-07 286
- var_pitch_belt   1 3.3434e-07 286

- avg_yaw_arm 1 3.3436e-07 286
- var_accel_arm 1 3.3436e-07 286
- min_pitch_forearm 1 3.3437e-07 286
- var_pitch_forearm 1 3.3438e-07 286
- magnet_dumbbell_z 1 3.3439e-07 286
- min_yaw_arm 1 3.3440e-07 286
- min_roll_forearm 1 3.3442e-07 286
- max_roll_forearm 1 3.3443e-07 286
- yaw_arm 1 3.3443e-07 286
- amplitude_roll_forearm 1 3.3443e-07 286
- stddev_pitch_forearm 1 3.3444e-07 286
- gyros_belt_x 1 3.3456e-07 286
- accel_belt_z 1 3.3461e-07 286
- gyros_dumbbell_x 1 3.3509e-07 286
- magnet_dumbbell_x 1 3.3511e-07 286
- gyros_forearm_x 1 3.3533e-07 286
- yaw_forearm 1 3.3547e-07 286
- accel_belt_x 1 3.3562e-07 286
- total_accel_arm 1 3.3582e-07 286
- magnet_belt_y 1 3.3606e-07 286
- gyros_dumbbell_z 1 3.3609e-07 286
- gyros_arm_y 1 3.3614e-07 286
- gyros_belt_z 1 3.3621e-07 286
- roll_arm 1 3.3625e-07 286
- magnet_forearm_y 1 3.3636e-07 286
- yaw_dumbbell 1 3.3649e-07 286
- gyros_arm_x 1 3.3658e-07 286
- accel_dumbbell_z 1 3.3697e-07 286
- total_accel_forearm 1 3.3718e-07 286
- accel_dumbbell_y 1 3.3734e-07 286
- magnet_arm_z 1 3.3734e-07 286
- magnet_arm_x 1 3.3763e-07 286
- user_name 1 3.3774e-07 286
- gyros_arm_z 1 3.3788e-07 286
- magnet_belt_x 1 3.3798e-07 286
- roll_belt 1 3.3844e-07 286
- total_accel_belt 1 3.3895e-07 286
- cvtd_timestamp 1 3.3940e-07 286
- accel_belt_y 1 3.3987e-07 286
- pitch_belt 1 3.3988e-07 286
- total_accel_dumbbell 1 3.4029e-07 286
- raw_timestamp_part_2 1 3.4090e-07 286
- accel_dumbbell_x 1 3.4192e-07 286
- magnet_belt_z 1 3.4210e-07 286
- gyros_belt_y 1 3.4214e-07 286
- accel_forearm_x 1 3.4216e-07 286
- accel_forearm_y 1 3.4217e-07 286
- raw_timestamp_part_1 1 3.4253e-07 286
- accel_forearm_z 1 3.4264e-07 286
- roll_dumbbell 1 3.4268e-07 286
- pitch_dumbbell 1 3.4269e-07 286
- pitch_forearm 1 3.4316e-07 286
- gyros_forearm_y 1 3.4329e-07 286
- accel_arm_x 1 3.4429e-07 286
- gyros_forearm_z 1 3.4816e-07 286
- accel_arm_z 1 3.5009e-07 286
- magnet_forearm_x 1 3.5557e-07 286

```
- magnet_forearm_z          1 3.5892e-07 286
- magnet_arm_y              1 3.7165e-07 286
- accel_arm_y               1 3.8108e-07 286
- pitch_arm                 1 4.1084e-07 286
- num_window                1 5.9675e-07 286
<none>                        3.3424e-07 288

Step:  AIC=286
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + avg_yaw_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + var_roll_arm +
    avg_pitch_arm + stddev_pitch_arm + var_pitch_arm + avg_yaw_arm +
    stddev_yaw_arm + var_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + kurtosis_picth_arm +
    kurtosis_yaw_arm + skewness_roll_arm + skewness_pitch_arm +
    skewness_yaw_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_pitch_arm + min_yaw_arm + amplitude_roll_arm +
    amplitude_pitch_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    kurtosis_roll_dumbbell + kurtosis_picth_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + avg_roll_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + stddev_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    var_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                           Df   Deviance AIC
- kurtosis_picth_arm        1 3.3388e-07 284
- var_yaw_dumbbell          1 3.3388e-07 284
- avg_roll_dumbbell         1 3.3389e-07 284
- stddev_yaw_dumbbell       1 3.3390e-07 284
```

- max_yaw_dumbbell 1 3.3390e-07 284
- skewness_pitch_forearm 1 3.3390e-07 284
- kurtosis_roll_dumbbell 1 3.3390e-07 284
- var_roll_dumbbell 1 3.3391e-07 284
- skewness_roll_forearm 1 3.3391e-07 284
- var_yaw_arm 1 3.3391e-07 284
- stddev_roll_dumbbell 1 3.3391e-07 284
- avg_roll_arm 1 3.3392e-07 284
- var_pitch_dumbbell 1 3.3392e-07 284
- amplitude_roll_arm 1 3.3392e-07 284
- min_roll_arm 1 3.3392e-07 284
- max_roll_arm 1 3.3392e-07 284
- avg_pitch_forearm 1 3.3392e-07 284
- avg_roll_belt 1 3.3393e-07 284
- skewness_roll_arm 1 3.3393e-07 284
- magnet_dumbbell_y 1 3.3393e-07 284
- var_roll_belt 1 3.3393e-07 284
- stddev_pitch_dumbbell 1 3.3393e-07 284
- max_picth_arm 1 3.3393e-07 284
- min_pitch_arm 1 3.3393e-07 284
- amplitude_pitch_arm 1 3.3393e-07 284
- avg_yaw_belt 1 3.3393e-07 284
- max_roll_belt 1 3.3394e-07 284
- min_roll_belt 1 3.3394e-07 284
- var_yaw_belt 1 3.3394e-07 284
- stddev_roll_belt 1 3.3394e-07 284
- kurtosis_roll_forearm 1 3.3394e-07 284
- max_yaw_forearm 1 3.3394e-07 284
- max_picth_belt 1 3.3394e-07 284
- skewness_roll_belt.1 1 3.3394e-07 284
- skewness_yaw_arm 1 3.3394e-07 284
- kurtosis_picth_belt 1 3.3395e-07 284
- skewness_pitch_dumbbell 1 3.3395e-07 284
- avg_pitch_arm 1 3.3395e-07 284
- kurtosis_picth_dumbbell 1 3.3395e-07 284
- max_picth_forearm 1 3.3395e-07 284
- amplitude_roll_belt 1 3.3395e-07 284
- kurtosis_yaw_arm 1 3.3395e-07 284
- kurtosis_picth_forearm 1 3.3395e-07 284
- max_yaw_belt 1 3.3396e-07 284
- kurtosis_roll_belt 1 3.3396e-07 284
- stddev_pitch_arm 1 3.3396e-07 284
- amplitude_pitch_dumbbell 1 3.3396e-07 284
- stddev_yaw_forearm 1 3.3396e-07 284
- min_pitch_dumbbell 1 3.3396e-07 284
- var_roll_arm 1 3.3396e-07 284
- max_picth_dumbbell 1 3.3396e-07 284
- skewness_pitch_arm 1 3.3396e-07 284
- avg_pitch_belt 1 3.3397e-07 284
- stddev_yaw_arm 1 3.3397e-07 284
- var_pitch_arm 1 3.3397e-07 284
- new_window 1 3.3397e-07 284
- var_accel_forearm 1 3.3397e-07 284
- skewness_roll_dumbbell 1 3.3397e-07 284
- avg_yaw_forearm 1 3.3397e-07 284
- var_total_accel_belt 1 3.3398e-07 284
- var_yaw_forearm 1 3.3398e-07 284

- avg_yaw_dumbbell 1 3.3398e-07 284
- avg_roll_forearm 1 3.3398e-07 284
- skewness_roll_belt 1 3.3398e-07 284
- var_accel_dumbbell 1 3.3399e-07 284
- stddev_roll_arm 1 3.3399e-07 284
- stddev_yaw_belt 1 3.3399e-07 284
- stddev_roll_forearm 1 3.3399e-07 284
- min_pitch_belt 1 3.3400e-07 284
- var_roll_forearm 1 3.3400e-07 284
- gyros_dumbbell_y 1 3.3400e-07 284
- avg_pitch_dumbbell 1 3.3401e-07 284
- max_yaw_arm 1 3.3401e-07 284
- amplitude_roll_dumbbell 1 3.3401e-07 284
- min_roll_dumbbell 1 3.3401e-07 284
- max_roll_dumbbell 1 3.3401e-07 284
- amplitude_yaw_forearm 1 3.3401e-07 284
- stddev_pitch_belt 1 3.3403e-07 284
- kurtosis_roll_arm 1 3.3404e-07 284
- var_pitch_belt 1 3.3405e-07 284
- var_accel_arm 1 3.3406e-07 284
- avg_yaw_arm 1 3.3406e-07 284
- min_pitch_forearm 1 3.3407e-07 284
- var_pitch_forearm 1 3.3407e-07 284
- magnet_dumbbell_z 1 3.3408e-07 284
- min_yaw_arm 1 3.3408e-07 284
- gyros_belt_x 1 3.3411e-07 284
- min_roll_forearm 1 3.3412e-07 284
- max_roll_forearm 1 3.3412e-07 284
- amplitude_roll_forearm 1 3.3412e-07 284
- stddev_pitch_forearm 1 3.3413e-07 284
- yaw_arm 1 3.3430e-07 284
- accel_belt_z 1 3.3441e-07 284
- gyros_dumbbell_x 1 3.3482e-07 284
- accel_belt_x 1 3.3524e-07 284
- magnet_dumbbell_x 1 3.3536e-07 284
- total_accel_arm 1 3.3539e-07 284
- gyros_dumbbell_z 1 3.3542e-07 284
- gyros_belt_z 1 3.3576e-07 284
- magnet_belt_y 1 3.3581e-07 284
- gyros_forearm_x 1 3.3585e-07 284
- magnet_forearm_y 1 3.3595e-07 284
- gyros_arm_x 1 3.3598e-07 284
- yaw_forearm 1 3.3612e-07 284
- yaw_dumbbell 1 3.3613e-07 284
- roll_arm 1 3.3620e-07 284
- gyros_arm_y 1 3.3626e-07 284
- magnet_arm_z 1 3.3651e-07 284
- accel_dumbbell_z 1 3.3669e-07 284
- roll_belt 1 3.3682e-07 284
- accel_dumbbell_y 1 3.3707e-07 284
- magnet_arm_x 1 3.3730e-07 284
- total_accel_forearm 1 3.3731e-07 284
- user_name 1 3.3779e-07 284
- gyros_arm_z 1 3.3821e-07 284
- total_accel_belt 1 3.3882e-07 284
- magnet_belt_x 1 3.3895e-07 284
- pitch_belt 1 3.3927e-07 284

```
- cvtd_timestamp            1 3.3937e-07 284
- accel_belt_y              1 3.3955e-07 284
- total_accel_dumbbell      1 3.4013e-07 284
- gyros_belt_y              1 3.4196e-07 284
- roll_dumbbell             1 3.4208e-07 284
- accel_dumbbell_x          1 3.4213e-07 284
- accel_forearm_x           1 3.4219e-07 284
- raw_timestamp_part_2      1 3.4238e-07 284
- raw_timestamp_part_1      1 3.4245e-07 284
- accel_forearm_y           1 3.4264e-07 284
- magnet_belt_z             1 3.4299e-07 284
- pitch_dumbbell            1 3.4299e-07 284
- gyros_forearm_y           1 3.4304e-07 284
- pitch_forearm             1 3.4345e-07 284
- accel_forearm_z           1 3.4411e-07 284
- accel_arm_x               1 3.4426e-07 284
- gyros_forearm_z           1 3.4803e-07 284
- accel_arm_z               1 3.5000e-07 284
- magnet_forearm_x          1 3.5696e-07 284
- magnet_forearm_z          1 3.6194e-07 284
- magnet_arm_y              1 3.7411e-07 284
- accel_arm_y               1 3.8271e-07 284
- pitch_arm                 1 4.1200e-07 284
- num_window                1 6.0541e-07 284
<none>                        3.3393e-07 286

Step:  AIC=284
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + avg_yaw_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + var_roll_arm +
    avg_pitch_arm + stddev_pitch_arm + var_pitch_arm + avg_yaw_arm +
    stddev_yaw_arm + var_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm +
    skewness_roll_arm + skewness_pitch_arm + skewness_yaw_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_pitch_arm + min_yaw_arm + amplitude_roll_arm + amplitude_pitch_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + var_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
```

```
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_roll_forearm + kurtosis_picth_fore
arm +
    skewness_roll_forearm + skewness_pitch_forearm + max_roll_forearm +
    max_picth_forearm + max_yaw_forearm + min_roll_forearm +
    min_pitch_forearm + amplitude_roll_forearm + amplitude_yaw_forearm +
    total_accel_forearm + var_accel_forearm + avg_roll_forearm +
    stddev_roll_forearm + var_roll_forearm + avg_pitch_forearm +
    stddev_pitch_forearm + var_pitch_forearm + avg_yaw_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                           Df   Deviance AIC
- var_yaw_dumbbell          1 3.3384e-07 282
- var_roll_dumbbell         1 3.3385e-07 282
- avg_roll_dumbbell         1 3.3385e-07 282
- avg_pitch_forearm         1 3.3386e-07 282
- avg_yaw_belt              1 3.3387e-07 282
- var_pitch_dumbbell        1 3.3387e-07 282
- max_picth_arm             1 3.3387e-07 282
- min_pitch_arm             1 3.3387e-07 282
- amplitude_pitch_arm       1 3.3387e-07 282
- magnet_dumbbell_y         1 3.3387e-07 282
- stddev_pitch_dumbbell     1 3.3387e-07 282
- stddev_roll_dumbbell      1 3.3387e-07 282
- avg_roll_belt             1 3.3388e-07 282
- var_yaw_belt              1 3.3388e-07 282
- skewness_pitch_forearm    1 3.3388e-07 282
- max_picth_belt            1 3.3388e-07 282
- var_yaw_arm               1 3.3388e-07 282
- amplitude_pitch_dumbbell  1 3.3388e-07 282
- skewness_roll_arm         1 3.3389e-07 282
- min_pitch_dumbbell        1 3.3389e-07 282
- max_picth_dumbbell        1 3.3389e-07 282
- max_picth_forearm         1 3.3389e-07 282
- max_roll_belt             1 3.3389e-07 282
- min_roll_belt             1 3.3389e-07 282
- var_roll_belt             1 3.3389e-07 282
- kurtosis_picth_dumbbell   1 3.3389e-07 282
- max_yaw_dumbbell          1 3.3390e-07 282
- kurtosis_roll_dumbbell    1 3.3390e-07 282
- stddev_yaw_dumbbell       1 3.3390e-07 282
- skewness_yaw_arm          1 3.3390e-07 282
- skewness_roll_forearm     1 3.3390e-07 282
- max_yaw_belt              1 3.3390e-07 282
- kurtosis_roll_belt        1 3.3390e-07 282
- amplitude_roll_belt       1 3.3390e-07 282
- stddev_yaw_forearm        1 3.3390e-07 282
- var_roll_arm              1 3.3391e-07 282
- avg_roll_arm              1 3.3391e-07 282
- stddev_roll_belt          1 3.3391e-07 282
- kurtosis_yaw_arm          1 3.3391e-07 282
- avg_pitch_arm             1 3.3392e-07 282
- kurtosis_roll_forearm     1 3.3392e-07 282
- skewness_pitch_dumbbell   1 3.3392e-07 282
- stddev_yaw_arm            1 3.3392e-07 282
```

- max_yaw_forearm 1 3.3392e-07 282
- kurtosis_picth_forearm 1 3.3392e-07 282
- var_accel_dumbbell 1 3.3393e-07 282
- avg_yaw_forearm 1 3.3393e-07 282
- skewness_roll_belt.1 1 3.3393e-07 282
- stddev_roll_forearm 1 3.3394e-07 282
- stddev_yaw_belt 1 3.3394e-07 282
- avg_roll_forearm 1 3.3394e-07 282
- var_roll_forearm 1 3.3394e-07 282
- gyros_dumbbell_y 1 3.3394e-07 282
- var_pitch_arm 1 3.3394e-07 282
- stddev_pitch_arm 1 3.3395e-07 282
- kurtosis_picth_belt 1 3.3395e-07 282
- var_yaw_forearm 1 3.3396e-07 282
- amplitude_roll_dumbbell 1 3.3396e-07 282
- min_roll_dumbbell 1 3.3396e-07 282
- max_roll_dumbbell 1 3.3396e-07 282
- skewness_roll_belt 1 3.3396e-07 282
- skewness_roll_dumbbell 1 3.3397e-07 282
- max_yaw_arm 1 3.3397e-07 282
- avg_pitch_dumbbell 1 3.3397e-07 282
- amplitude_yaw_forearm 1 3.3397e-07 282
- min_pitch_belt 1 3.3397e-07 282
- avg_yaw_dumbbell 1 3.3397e-07 282
- new_window 1 3.3399e-07 282
- skewness_pitch_arm 1 3.3399e-07 282
- avg_pitch_belt 1 3.3399e-07 282
- var_pitch_belt 1 3.3400e-07 282
- stddev_pitch_belt 1 3.3402e-07 282
- magnet_dumbbell_z 1 3.3402e-07 282
- min_yaw_arm 1 3.3403e-07 282
- avg_yaw_arm 1 3.3404e-07 282
- min_pitch_forearm 1 3.3404e-07 282
- var_pitch_forearm 1 3.3405e-07 282
- gyros_belt_x 1 3.3406e-07 282
- var_accel_arm 1 3.3407e-07 282
- stddev_pitch_forearm 1 3.3411e-07 282
- yaw_arm 1 3.3425e-07 282
- var_accel_forearm 1 3.3428e-07 282
- accel_belt_z 1 3.3435e-07 282
- min_roll_forearm 1 3.3435e-07 282
- max_roll_forearm 1 3.3443e-07 282
- amplitude_roll_forearm 1 3.3470e-07 282
- gyros_dumbbell_x 1 3.3476e-07 282
- accel_belt_x 1 3.3518e-07 282
- magnet_dumbbell_x 1 3.3530e-07 282
- total_accel_arm 1 3.3533e-07 282
- gyros_dumbbell_z 1 3.3538e-07 282
- var_total_accel_belt 1 3.3561e-07 282
- gyros_belt_z 1 3.3571e-07 282
- magnet_belt_y 1 3.3576e-07 282
- gyros_forearm_x 1 3.3582e-07 282
- magnet_forearm_y 1 3.3590e-07 282
- gyros_arm_x 1 3.3595e-07 282
- yaw_forearm 1 3.3606e-07 282
- yaw_dumbbell 1 3.3606e-07 282
- roll_arm 1 3.3616e-07 282

```
- gyros_arm_y               1 3.3623e-07 282
- roll_belt                 1 3.3642e-07 282
- magnet_arm_z              1 3.3645e-07 282
- accel_dumbbell_z          1 3.3661e-07 282
- accel_dumbbell_y          1 3.3700e-07 282
- total_accel_forearm       1 3.3726e-07 282
- magnet_arm_x              1 3.3727e-07 282
- user_name                 1 3.3775e-07 282
- gyros_arm_z               1 3.3821e-07 282
- total_accel_belt          1 3.3876e-07 282
- magnet_belt_x             1 3.3890e-07 282
- pitch_belt                1 3.3923e-07 282
- cvtd_timestamp            1 3.3931e-07 282
- accel_belt_y              1 3.3949e-07 282
- total_accel_dumbbell      1 3.4009e-07 282
- kurtosis_roll_arm         1 3.4040e-07 282
- gyros_belt_y              1 3.4193e-07 282
- roll_dumbbell             1 3.4200e-07 282
- accel_dumbbell_x          1 3.4209e-07 282
- accel_forearm_x           1 3.4215e-07 282
- raw_timestamp_part_2      1 3.4233e-07 282
- raw_timestamp_part_1      1 3.4244e-07 282
- accel_forearm_y           1 3.4256e-07 282
- magnet_belt_z             1 3.4289e-07 282
- pitch_dumbbell            1 3.4293e-07 282
- gyros_forearm_y           1 3.4300e-07 282
- pitch_forearm             1 3.4343e-07 282
- accel_forearm_z           1 3.4409e-07 282
- accel_arm_x               1 3.4420e-07 282
- gyros_forearm_z           1 3.4797e-07 282
- accel_arm_z               1 3.4996e-07 282
- magnet_forearm_x          1 3.5690e-07 282
- magnet_forearm_z          1 3.6191e-07 282
- amplitude_roll_arm        1 3.7097e-07 282
- magnet_arm_y              1 3.7403e-07 282
- accel_arm_y               1 3.8267e-07 282
- min_roll_arm              1 3.8518e-07 282
- pitch_arm                 1 4.1200e-07 282
- max_roll_arm              1 4.8987e-07 282
- num_window                1 6.0541e-07 282
- stddev_roll_arm           1 6.7660e-07 282
<none>                        3.3388e-07 284

Step:  AIC=282
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + avg_yaw_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + var_roll_arm +
    avg_pitch_arm + stddev_pitch_arm + var_pitch_arm + avg_yaw_arm +
```

```
    stddev_yaw_arm + var_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm +
    skewness_roll_arm + skewness_pitch_arm + skewness_yaw_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_pitch_arm + min_yaw_arm + amplitude_roll_arm + amplitude_pitch_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df Deviance   AIC
- avg_yaw_belt             1        0   280
- avg_pitch_forearm        1        0   280
- max_picth_arm            1        0   280
- min_pitch_arm            1        0   280
- amplitude_pitch_arm      1        0   280
- stddev_pitch_dumbbell    1        0   280
- var_pitch_dumbbell       1        0   280
- var_roll_dumbbell        1        0   280
- skewness_pitch_forearm   1        0   280
- avg_roll_belt            1        0   280
- var_yaw_belt             1        0   280
- max_picth_forearm        1        0   280
- magnet_dumbbell_y        1        0   280
- amplitude_pitch_dumbbell 1        0   280
- max_roll_belt            1        0   280
- min_pitch_dumbbell       1        0   280
- var_yaw_arm              1        0   280
- max_picth_dumbbell       1        0   280
- min_roll_belt            1        0   280
- kurtosis_picth_dumbbell  1        0   280
- max_yaw_dumbbell         1        0   280
- kurtosis_roll_dumbbell   1        0   280
- amplitude_roll_belt      1        0   280
- skewness_yaw_arm         1        0   280
- stddev_yaw_dumbbell      1        0   280
- skewness_roll_arm        1        0   280
- kurtosis_yaw_arm         1        0   280
```

- avg_roll_arm 1 0 280
- skewness_roll_forearm 1 0 280
- kurtosis_picth_forearm 1 0 280
- max_picth_belt 1 0 280
- max_yaw_forearm 1 0 280
- gyros_dumbbell_y 1 0 280
- var_pitch_arm 1 0 280
- stddev_yaw_arm 1 0 280
- skewness_pitch_dumbbell 1 0 280
- stddev_yaw_belt 1 0 280
- stddev_roll_forearm 1 0 280
- var_roll_arm 1 0 280
- stddev_yaw_forearm 1 0 280
- var_roll_forearm 1 0 280
- var_accel_forearm 1 0 280
- kurtosis_roll_forearm 1 0 280
- var_yaw_forearm 1 0 280
- stddev_roll_belt 1 0 280
- skewness_roll_belt 1 0 280
- max_yaw_arm 1 0 280
- avg_pitch_dumbbell 1 0 280
- avg_yaw_dumbbell 1 0 280
- stddev_pitch_arm 1 0 280
- amplitude_yaw_forearm 1 0 280
- min_pitch_belt 1 0 280
- var_accel_dumbbell 1 0 280
- var_roll_belt 1 0 280
- skewness_roll_dumbbell 1 0 280
- avg_pitch_arm 1 0 280
- amplitude_roll_arm 1 0 280
- avg_roll_forearm 1 0 280
- avg_pitch_belt 1 0 280
- max_roll_dumbbell 1 0 280
- new_window 1 0 280
- min_roll_arm 1 0 280
- stddev_roll_arm 1 0 280
- min_roll_dumbbell 1 0 280
- stddev_pitch_belt 1 0 280
- amplitude_roll_dumbbell 1 0 280
- max_roll_arm 1 0 280
- var_total_accel_belt 1 0 280
- magnet_dumbbell_z 1 0 280
- avg_yaw_forearm 1 0 280
- gyros_belt_x 1 0 280
- min_pitch_forearm 1 0 280
- var_pitch_belt 1 0 280
- max_roll_forearm 1 0 280
- amplitude_roll_forearm 1 0 280
- min_roll_forearm 1 0 280
- avg_yaw_arm 1 0 280
- skewness_pitch_arm 1 0 280
- var_accel_arm 1 0 280
- kurtosis_roll_arm 1 0 280
- var_pitch_forearm 1 0 280
- stddev_pitch_forearm 1 0 280
- yaw_arm 1 0 280
- accel_belt_z 1 0 280

```
- max_yaw_belt              1        0   280
- kurtosis_roll_belt        1        0   280
- gyros_dumbbell_x          1        0   280
- accel_belt_x              1        0   280
- total_accel_arm           1        0   280
- gyros_dumbbell_z          1        0   280
- gyros_belt_z              1        0   280
- magnet_belt_y             1        0   280
- gyros_forearm_x           1        0   280
- magnet_forearm_y          1        0   280
- gyros_arm_x               1        0   280
- yaw_forearm               1        0   280
- yaw_dumbbell              1        0   280
- gyros_arm_y               1        0   280
- roll_arm                  1        0   280
- magnet_arm_z              1        0   280
- roll_belt                 1        0   280
- accel_dumbbell_z          1        0   280
- accel_dumbbell_y          1        0   280
- magnet_arm_x              1        0   280
- user_name                 1        0   280
- gyros_arm_z               1        0   280
- total_accel_belt          1        0   280
- pitch_belt                1        0   280
- cvtd_timestamp            1        0   280
- accel_belt_y              1        0   280
- gyros_belt_y              1        0   280
- roll_dumbbell             1        0   280
- accel_forearm_x           1        0   280
- raw_timestamp_part_2      1        0   280
- raw_timestamp_part_1      1        0   280
- magnet_belt_z             1        0   280
- gyros_forearm_y           1        0   280
- accel_forearm_z           1        0   280
- accel_arm_x               1        0   280
- gyros_forearm_z           1        0   280
- accel_arm_z               1        0   280
- magnet_forearm_z          1        0   280
- pitch_forearm             1        0   280
- magnet_arm_y              1        0   280
- accel_arm_y               1        0   280
- magnet_forearm_x          1        0   280
- pitch_arm                 1        0   280
- avg_roll_dumbbell         1        0   280
- total_accel_dumbbell      1        0   280
- magnet_belt_x             1        0   280
- num_window                1        0   280
- accel_forearm_y           1        0   280
- min_yaw_arm               1        0   280
- pitch_dumbbell            1        0   280
- skewness_roll_belt.1      1        0   280
- magnet_dumbbell_x         1        0   280
- stddev_roll_dumbbell      1        0   280
- total_accel_forearm       1        0   280
- accel_dumbbell_x          1        0   280
<none>                                 0   282
- kurtosis_picth_belt       1    38423 38703
```

```
Step:  AIC=280
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    avg_roll_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- avg_roll_dumbbell        1 3.3380e-07 278
- max_picth_arm            1 3.3380e-07 278
- min_pitch_arm            1 3.3380e-07 278
- amplitude_pitch_arm      1 3.3380e-07 278
- avg_pitch_forearm        1 3.3380e-07 278
- stddev_pitch_dumbbell    1 3.3380e-07 278
- skewness_pitch_forearm   1 3.3380e-07 278
- var_pitch_dumbbell       1 3.3380e-07 278
- var_roll_dumbbell        1 3.3380e-07 278
- magnet_dumbbell_y        1 3.3380e-07 278
- var_yaw_belt             1 3.3380e-07 278
- max_picth_forearm        1 3.3390e-07 278
```

- amplitude_pitch_dumbbell 1 3.3390e-07 278
- min_pitch_dumbbell   1 3.3390e-07 278
- max_picth_dumbbell   1 3.3390e-07 278
- avg_roll_belt   1 3.3390e-07 278
- min_roll_belt   1 3.3390e-07 278
- max_roll_belt   1 3.3390e-07 278
- var_yaw_arm   1 3.3390e-07 278
- kurtosis_picth_dumbbell   1 3.3390e-07 278
- max_yaw_dumbbell   1 3.3390e-07 278
- kurtosis_roll_dumbbell   1 3.3390e-07 278
- skewness_yaw_arm   1 3.3390e-07 278
- amplitude_roll_belt   1 3.3390e-07 278
- stddev_roll_dumbbell   1 3.3390e-07 278
- avg_roll_arm   1 3.3390e-07 278
- stddev_yaw_forearm   1 3.3390e-07 278
- kurtosis_yaw_arm   1 3.3390e-07 278
- skewness_roll_arm   1 3.3390e-07 278
- skewness_roll_forearm   1 3.3390e-07 278
- gyros_dumbbell_y   1 3.3390e-07 278
- kurtosis_roll_forearm   1 3.3390e-07 278
- max_picth_belt   1 3.3390e-07 278
- max_yaw_forearm   1 3.3390e-07 278
- var_accel_forearm   1 3.3390e-07 278
- stddev_roll_forearm   1 3.3390e-07 278
- kurtosis_picth_forearm   1 3.3390e-07 278
- skewness_roll_belt.1   1 3.3390e-07 278
- var_roll_forearm   1 3.3390e-07 278
- amplitude_roll_arm   1 3.3390e-07 278
- min_roll_arm   1 3.3390e-07 278
- skewness_pitch_dumbbell   1 3.3390e-07 278
- max_roll_arm   1 3.3390e-07 278
- stddev_yaw_arm   1 3.3390e-07 278
- max_yaw_belt   1 3.3390e-07 278
- kurtosis_roll_belt   1 3.3390e-07 278
- var_yaw_forearm   1 3.3390e-07 278
- stddev_roll_belt   1 3.3390e-07 278
- max_yaw_arm   1 3.3390e-07 278
- skewness_pitch_arm   1 3.3390e-07 278
- var_pitch_arm   1 3.3390e-07 278
- stddev_pitch_arm   1 3.3390e-07 278
- avg_pitch_arm   1 3.3390e-07 278
- skewness_roll_dumbbell   1 3.3390e-07 278
- var_accel_dumbbell   1 3.3390e-07 278
- var_roll_arm   1 3.3400e-07 278
- avg_yaw_forearm   1 3.3400e-07 278
- avg_pitch_dumbbell   1 3.3400e-07 278
- magnet_dumbbell_z   1 3.3400e-07 278
- skewness_roll_belt   1 3.3400e-07 278
- amplitude_yaw_forearm   1 3.3400e-07 278
- avg_roll_forearm   1 3.3400e-07 278
- min_pitch_belt   1 3.3400e-07 278
- stddev_yaw_dumbbell   1 3.3400e-07 278
- avg_yaw_dumbbell   1 3.3400e-07 278
- amplitude_roll_dumbbell   1 3.3400e-07 278
- min_roll_dumbbell   1 3.3400e-07 278
- max_roll_dumbbell   1 3.3400e-07 278
- stddev_roll_arm   1 3.3400e-07 278

- min_yaw_arm 1 3.3400e-07 278
- var_total_accel_belt 1 3.3400e-07 278
- gyros_belt_x 1 3.3400e-07 278
- avg_yaw_arm 1 3.3400e-07 278
- kurtosis_roll_arm 1 3.3400e-07 278
- var_pitch_forearm 1 3.3410e-07 278
- min_pitch_forearm 1 3.3410e-07 278
- var_accel_arm 1 3.3410e-07 278
- var_pitch_belt 1 3.3410e-07 278
- stddev_pitch_forearm 1 3.3410e-07 278
- amplitude_roll_forearm 1 3.3410e-07 278
- avg_pitch_belt 1 3.3410e-07 278
- max_roll_forearm 1 3.3420e-07 278
- yaw_arm 1 3.3420e-07 278
- new_window 1 3.3430e-07 278
- accel_belt_z 1 3.3430e-07 278
- gyros_dumbbell_x 1 3.3480e-07 278
- accel_belt_x 1 3.3510e-07 278
- total_accel_arm 1 3.3530e-07 278
- magnet_dumbbell_x 1 3.3540e-07 278
- gyros_dumbbell_z 1 3.3540e-07 278
- gyros_belt_z 1 3.3570e-07 278
- magnet_belt_y 1 3.3570e-07 278
- magnet_forearm_y 1 3.3590e-07 278
- gyros_arm_x 1 3.3590e-07 278
- yaw_forearm 1 3.3600e-07 278
- yaw_dumbbell 1 3.3610e-07 278
- roll_arm 1 3.3610e-07 278
- gyros_arm_y 1 3.3620e-07 278
- magnet_arm_z 1 3.3640e-07 278
- roll_belt 1 3.3650e-07 278
- stddev_pitch_belt 1 3.3700e-07 278
- accel_dumbbell_z 1 3.3700e-07 278
- accel_dumbbell_y 1 3.3700e-07 278
- magnet_arm_x 1 3.3720e-07 278
- total_accel_forearm 1 3.3730e-07 278
- user_name 1 3.3770e-07 278
- var_roll_belt 1 3.3820e-07 278
- gyros_arm_z 1 3.3820e-07 278
- total_accel_belt 1 3.3870e-07 278
- magnet_belt_x 1 3.3890e-07 278
- cvtd_timestamp 1 3.3930e-07 278
- pitch_belt 1 3.3930e-07 278
- accel_belt_y 1 3.3950e-07 278
- total_accel_dumbbell 1 3.4010e-07 278
- gyros_belt_y 1 3.4190e-07 278
- roll_dumbbell 1 3.4200e-07 278
- accel_dumbbell_x 1 3.4220e-07 278
- accel_forearm_x 1 3.4220e-07 278
- raw_timestamp_part_2 1 3.4230e-07 278
- raw_timestamp_part_1 1 3.4240e-07 278
- accel_forearm_y 1 3.4270e-07 278
- pitch_dumbbell 1 3.4300e-07 278
- magnet_belt_z 1 3.4300e-07 278
- gyros_forearm_y 1 3.4300e-07 278
- pitch_forearm 1 3.4340e-07 278
- min_roll_forearm 1 3.4360e-07 278

```
- accel_forearm_z           1 3.4400e-07 278
- accel_arm_x               1 3.4430e-07 278
- gyros_forearm_z           1 3.4800e-07 278
- accel_arm_z               1 3.4990e-07 278
- magnet_forearm_x          1 3.5700e-07 278
- magnet_forearm_z          1 3.6190e-07 278
- magnet_arm_y              1 3.7420e-07 278
- accel_arm_y               1 3.8280e-07 278
- pitch_arm                 1 4.1200e-07 278
- stddev_yaw_belt           1 5.8870e-07 278
- num_window                1 3.9678e-06 278
- gyros_forearm_x           1 1.3772e-05 278
- kurtosis_picth_belt       1 1.6521e-05 278
<none>                        3.3380e-07 280

Step:  AIC=278
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    stddev_roll_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    stddev_pitch_dumbbell + var_pitch_dumbbell + avg_yaw_dumbbell +
    stddev_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z
```

```
Step:  AIC=278
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + amplitude_pitch_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    stddev_roll_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    stddev_pitch_dumbbell + var_pitch_dumbbell + avg_yaw_dumbbell +
    stddev_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df   Deviance AIC
- amplitude_pitch_arm      1 3.3381e-07 276
- min_pitch_arm            1 3.3381e-07 276
- max_picth_arm            1 3.3381e-07 276
- stddev_pitch_dumbbell    1 3.3382e-07 276
- var_pitch_dumbbell       1 3.3382e-07 276
- var_yaw_belt             1 3.3383e-07 276
- skewness_yaw_arm         1 3.3383e-07 276
- max_yaw_dumbbell         1 3.3383e-07 276
- kurtosis_roll_dumbbell   1 3.3383e-07 276
```

- min_roll_belt 1 3.3383e-07 276
- avg_roll_belt 1 3.3384e-07 276
- max_roll_belt 1 3.3384e-07 276
- magnet_dumbbell_y 1 3.3384e-07 276
- var_yaw_arm 1 3.3384e-07 276
- kurtosis_picth_dumbbell 1 3.3384e-07 276
- skewness_pitch_forearm 1 3.3384e-07 276
- avg_pitch_forearm 1 3.3384e-07 276
- max_picth_forearm 1 3.3384e-07 276
- amplitude_pitch_dumbbell 1 3.3384e-07 276
- min_pitch_dumbbell 1 3.3385e-07 276
- max_picth_dumbbell 1 3.3385e-07 276
- amplitude_roll_belt 1 3.3385e-07 276
- var_roll_dumbbell 1 3.3385e-07 276
- avg_roll_arm 1 3.3385e-07 276
- stddev_yaw_dumbbell 1 3.3386e-07 276
- var_roll_belt 1 3.3386e-07 276
- skewness_roll_forearm 1 3.3387e-07 276
- amplitude_roll_arm 1 3.3387e-07 276
- min_roll_arm 1 3.3387e-07 276
- max_roll_arm 1 3.3387e-07 276
- stddev_roll_forearm 1 3.3387e-07 276
- stddev_roll_dumbbell 1 3.3389e-07 276
- kurtosis_yaw_arm 1 3.3389e-07 276
- kurtosis_roll_forearm 1 3.3389e-07 276
- var_roll_forearm 1 3.3389e-07 276
- kurtosis_picth_forearm 1 3.3389e-07 276
- max_yaw_forearm 1 3.3389e-07 276
- max_picth_belt 1 3.3390e-07 276
- stddev_roll_belt 1 3.3390e-07 276
- gyros_dumbbell_y 1 3.3390e-07 276
- skewness_roll_belt.1 1 3.3390e-07 276
- stddev_yaw_arm 1 3.3391e-07 276
- var_pitch_arm 1 3.3391e-07 276
- var_yaw_forearm 1 3.3392e-07 276
- stddev_yaw_forearm 1 3.3392e-07 276
- stddev_yaw_belt 1 3.3392e-07 276
- avg_pitch_arm 1 3.3392e-07 276
- var_roll_arm 1 3.3393e-07 276
- skewness_roll_dumbbell 1 3.3393e-07 276
- avg_yaw_forearm 1 3.3393e-07 276
- avg_pitch_dumbbell 1 3.3393e-07 276
- amplitude_roll_dumbbell 1 3.3394e-07 276
- min_roll_dumbbell 1 3.3394e-07 276
- max_roll_dumbbell 1 3.3394e-07 276
- avg_pitch_belt 1 3.3394e-07 276
- min_pitch_belt 1 3.3395e-07 276
- amplitude_yaw_forearm 1 3.3395e-07 276
- magnet_dumbbell_z 1 3.3396e-07 276
- stddev_pitch_arm 1 3.3396e-07 276
- avg_yaw_dumbbell 1 3.3397e-07 276
- skewness_pitch_arm 1 3.3397e-07 276
- new_window 1 3.3397e-07 276
- stddev_roll_arm 1 3.3398e-07 276
- skewness_roll_belt 1 3.3398e-07 276
- var_accel_dumbbell 1 3.3398e-07 276
- gyros_belt_x 1 3.3400e-07 276

- var_total_accel_belt   1 3.3400e-07 276
- amplitude_roll_forearm   1 3.3401e-07 276
- min_pitch_forearm   1 3.3402e-07 276
- max_yaw_belt   1 3.3405e-07 276
- kurtosis_roll_belt   1 3.3405e-07 276
- var_pitch_forearm   1 3.3405e-07 276
- max_roll_forearm   1 3.3406e-07 276
- min_roll_forearm   1 3.3406e-07 276
- kurtosis_roll_arm   1 3.3408e-07 276
- stddev_pitch_belt   1 3.3410e-07 276
- kurtosis_picth_belt   1 3.3412e-07 276
- var_pitch_belt   1 3.3413e-07 276
- skewness_roll_arm   1 3.3413e-07 276
- yaw_arm   1 3.3417e-07 276
- var_accel_arm   1 3.3417e-07 276
- accel_belt_z   1 3.3428e-07 276
- gyros_dumbbell_x   1 3.3475e-07 276
- accel_belt_x   1 3.3516e-07 276
- total_accel_arm   1 3.3529e-07 276
- magnet_dumbbell_x   1 3.3536e-07 276
- gyros_dumbbell_z   1 3.3540e-07 276
- gyros_belt_z   1 3.3566e-07 276
- magnet_belt_y   1 3.3573e-07 276
- roll_belt   1 3.3581e-07 276
- gyros_forearm_x   1 3.3586e-07 276
- magnet_forearm_y   1 3.3589e-07 276
- gyros_arm_x   1 3.3591e-07 276
- yaw_forearm   1 3.3601e-07 276
- yaw_dumbbell   1 3.3607e-07 276
- roll_arm   1 3.3616e-07 276
- gyros_arm_y   1 3.3618e-07 276
- magnet_arm_z   1 3.3644e-07 276
- accel_dumbbell_z   1 3.3661e-07 276
- accel_dumbbell_y   1 3.3698e-07 276
- magnet_arm_x   1 3.3717e-07 276
- total_accel_forearm   1 3.3730e-07 276
- user_name   1 3.3768e-07 276
- stddev_pitch_forearm   1 3.3801e-07 276
- gyros_arm_z   1 3.3818e-07 276
- total_accel_belt   1 3.3871e-07 276
- magnet_belt_x   1 3.3900e-07 276
- skewness_pitch_dumbbell   1 3.3917e-07 276
- cvtd_timestamp   1 3.3924e-07 276
- accel_belt_y   1 3.3949e-07 276
- pitch_belt   1 3.3961e-07 276
- total_accel_dumbbell   1 3.4017e-07 276
- gyros_belt_y   1 3.4187e-07 276
- roll_dumbbell   1 3.4202e-07 276
- accel_forearm_x   1 3.4220e-07 276
- accel_dumbbell_x   1 3.4222e-07 276
- raw_timestamp_part_2   1 3.4233e-07 276
- raw_timestamp_part_1   1 3.4243e-07 276
- accel_forearm_y   1 3.4267e-07 276
- magnet_belt_z   1 3.4281e-07 276
- pitch_dumbbell   1 3.4303e-07 276
- gyros_forearm_y   1 3.4307e-07 276
- pitch_forearm   1 3.4342e-07 276

```
- accel_forearm_z           1 3.4401e-07 276
- accel_arm_x               1 3.4414e-07 276
- avg_roll_forearm          1 3.4443e-07 276
- gyros_forearm_z           1 3.4807e-07 276
- accel_arm_z               1 3.4997e-07 276
- magnet_forearm_x          1 3.5734e-07 276
- magnet_forearm_z          1 3.6189e-07 276
- magnet_arm_y              1 3.8022e-07 276
- accel_arm_y               1 3.8281e-07 276
- pitch_arm                 1 4.1212e-07 276
- num_window                1 6.0656e-07 276
- avg_yaw_arm               1 8.5495e-07 276
- min_yaw_arm               1 8.7450e-07 276
- var_accel_forearm         1 1.4276e-06 276
- max_yaw_arm               1 1.8390e-06 276
<none>                        3.3382e-07 278

Step:  AIC=276
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    kurtosis_roll_dumbbell + kurtosis_picth_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + stddev_pitch_dumbbell + var_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
```

```
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                           Df   Deviance AIC
- stddev_pitch_dumbbell     1 3.3400e-07 274
- min_pitch_arm             1 3.3400e-07 274
- var_pitch_dumbbell        1 3.3400e-07 274
- var_yaw_belt              1 3.3400e-07 274
- magnet_dumbbell_y         1 3.3400e-07 274
- max_picth_forearm         1 3.3400e-07 274
- avg_pitch_forearm         1 3.3400e-07 274
- max_yaw_dumbbell          1 3.3400e-07 274
- amplitude_pitch_dumbbell  1 3.3400e-07 274
- var_yaw_arm               1 3.3400e-07 274
- min_pitch_dumbbell        1 3.3400e-07 274
- kurtosis_roll_dumbbell    1 3.3400e-07 274
- max_picth_dumbbell        1 3.3400e-07 274
- min_roll_belt             1 3.3400e-07 274
- kurtosis_picth_dumbbell   1 3.3400e-07 274
- avg_roll_arm              1 3.3400e-07 274
- max_roll_belt             1 3.3400e-07 274
- amplitude_roll_belt       1 3.3400e-07 274
- stddev_roll_forearm       1 3.3400e-07 274
- skewness_yaw_arm          1 3.3400e-07 274
- var_roll_dumbbell         1 3.3400e-07 274
- skewness_roll_forearm     1 3.3400e-07 274
- skewness_pitch_forearm    1 3.3400e-07 274
- amplitude_roll_arm        1 3.3400e-07 274
- stddev_yaw_dumbbell       1 3.3400e-07 274
- min_roll_arm              1 3.3400e-07 274
- max_roll_arm              1 3.3400e-07 274
- var_roll_forearm          1 3.3400e-07 274
- var_roll_belt             1 3.3400e-07 274
- kurtosis_picth_forearm    1 3.3400e-07 274
- stddev_roll_dumbbell      1 3.3400e-07 274
- gyros_dumbbell_y          1 3.3400e-07 274
- stddev_yaw_arm            1 3.3400e-07 274
- stddev_yaw_forearm        1 3.3400e-07 274
- skewness_roll_belt.1      1 3.3400e-07 274
- var_pitch_arm             1 3.3400e-07 274
- max_picth_belt            1 3.3400e-07 274
- var_yaw_forearm           1 3.3400e-07 274
- skewness_pitch_dumbbell   1 3.3400e-07 274
- avg_roll_belt             1 3.3400e-07 274
- var_roll_arm              1 3.3400e-07 274
- skewness_roll_arm         1 3.3400e-07 274
- skewness_pitch_arm        1 3.3400e-07 274
- max_yaw_forearm           1 3.3400e-07 274
- magnet_dumbbell_z         1 3.3400e-07 274
- stddev_roll_belt          1 3.3400e-07 274
- amplitude_yaw_forearm     1 3.3400e-07 274
- skewness_roll_dumbbell    1 3.3400e-07 274
- new_window                1 3.3400e-07 274
- avg_yaw_dumbbell          1 3.3400e-07 274
- stddev_roll_arm           1 3.3400e-07 274
- var_accel_forearm         1 3.3400e-07 274
- gyros_belt_x              1 3.3400e-07 274
```

- min_pitch_belt 1 3.3400e-07 274
- min_roll_dumbbell 1 3.3400e-07 274
- amplitude_roll_dumbbell 1 3.3400e-07 274
- min_roll_forearm 1 3.3400e-07 274
- max_roll_dumbbell 1 3.3400e-07 274
- avg_roll_forearm 1 3.3400e-07 274
- kurtosis_roll_forearm 1 3.3400e-07 274
- avg_pitch_belt 1 3.3400e-07 274
- stddev_pitch_arm 1 3.3400e-07 274
- max_roll_forearm 1 3.3400e-07 274
- avg_yaw_forearm 1 3.3400e-07 274
- amplitude_roll_forearm 1 3.3400e-07 274
- max_yaw_arm 1 3.3400e-07 274
- avg_pitch_dumbbell 1 3.3400e-07 274
- avg_yaw_arm 1 3.3400e-07 274
- min_yaw_arm 1 3.3400e-07 274
- max_yaw_belt 1 3.3400e-07 274
- kurtosis_roll_belt 1 3.3400e-07 274
- kurtosis_picth_belt 1 3.3400e-07 274
- var_pitch_forearm 1 3.3400e-07 274
- stddev_yaw_belt 1 3.3400e-07 274
- stddev_pitch_belt 1 3.3400e-07 274
- kurtosis_roll_arm 1 3.3400e-07 274
- max_picth_arm 1 3.3400e-07 274
- stddev_pitch_forearm 1 3.3400e-07 274
- yaw_arm 1 3.3400e-07 274
- avg_pitch_arm 1 3.3400e-07 274
- skewness_roll_belt 1 3.3400e-07 274
- accel_belt_z 1 3.3400e-07 274
- var_accel_dumbbell 1 3.3400e-07 274
- gyros_dumbbell_x 1 3.3500e-07 274
- var_accel_arm 1 3.3500e-07 274
- accel_belt_x 1 3.3500e-07 274
- total_accel_arm 1 3.3500e-07 274
- magnet_dumbbell_x 1 3.3500e-07 274
- gyros_dumbbell_z 1 3.3500e-07 274
- gyros_belt_z 1 3.3600e-07 274
- magnet_belt_y 1 3.3600e-07 274
- gyros_forearm_x 1 3.3600e-07 274
- magnet_forearm_y 1 3.3600e-07 274
- gyros_arm_x 1 3.3600e-07 274
- yaw_forearm 1 3.3600e-07 274
- roll_belt 1 3.3600e-07 274
- yaw_dumbbell 1 3.3600e-07 274
- roll_arm 1 3.3600e-07 274
- gyros_arm_y 1 3.3600e-07 274
- magnet_arm_z 1 3.3600e-07 274
- accel_dumbbell_z 1 3.3700e-07 274
- accel_dumbbell_y 1 3.3700e-07 274
- magnet_arm_x 1 3.3700e-07 274
- total_accel_forearm 1 3.3700e-07 274
- user_name 1 3.3800e-07 274
- gyros_arm_z 1 3.3800e-07 274
- kurtosis_yaw_arm 1 3.3800e-07 274
- total_accel_belt 1 3.3900e-07 274
- magnet_belt_x 1 3.3900e-07 274
- pitch_belt 1 3.3900e-07 274

```
- cvtd_timestamp            1 3.3900e-07 274
- accel_belt_y              1 3.3900e-07 274
- total_accel_dumbbell      1 3.4000e-07 274
- gyros_belt_y              1 3.4200e-07 274
- roll_dumbbell             1 3.4200e-07 274
- accel_forearm_x           1 3.4200e-07 274
- accel_dumbbell_x          1 3.4200e-07 274
- raw_timestamp_part_2      1 3.4200e-07 274
- raw_timestamp_part_1      1 3.4200e-07 274
- accel_forearm_y           1 3.4300e-07 274
- magnet_belt_z             1 3.4300e-07 274
- pitch_dumbbell            1 3.4300e-07 274
- gyros_forearm_y           1 3.4300e-07 274
- pitch_forearm             1 3.4300e-07 274
- accel_forearm_z           1 3.4400e-07 274
- gyros_forearm_z           1 3.4800e-07 274
- accel_arm_z               1 3.5000e-07 274
- magnet_forearm_x          1 3.5700e-07 274
- magnet_forearm_z          1 3.6200e-07 274
- magnet_arm_y              1 3.7500e-07 274
- accel_arm_y               1 3.8300e-07 274
- pitch_arm                 1 4.1200e-07 274
- accel_arm_x               1 4.9600e-07 274
- var_total_accel_belt      1 5.5400e-07 274
- num_window                1 6.0900e-07 274
- var_pitch_belt            1 6.1300e-07 274
- min_pitch_forearm         1 5.6859e-05 274
<none>                        3.3400e-07 276

Step:  AIC=274
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_pitch_arm + min_yaw_arm +
    amplitude_roll_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    kurtosis_roll_dumbbell + kurtosis_picth_dumbbell + skewness_roll_dumbbell
+
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + stddev_roll_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + var_pitch_dumbbell + avg_yaw_dumbbell +
```

```
    stddev_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_picth_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df Deviance    AIC
- min_pitch_arm            1     0.00 272.00
- var_pitch_dumbbell       1     0.00 272.00
- var_yaw_belt             1     0.00 272.00
- magnet_dumbbell_y        1     0.00 272.00
- avg_pitch_forearm        1     0.00 272.00
- avg_roll_belt            1     0.00 272.00
- max_picth_forearm        1     0.00 272.00
- min_roll_belt            1     0.00 272.00
- amplitude_pitch_dumbbell 1     0.00 272.00
- min_pitch_dumbbell       1     0.00 272.00
- max_picth_dumbbell       1     0.00 272.00
- var_yaw_arm              1     0.00 272.00
- max_roll_belt            1     0.00 272.00
- max_yaw_dumbbell         1     0.00 272.00
- kurtosis_roll_dumbbell   1     0.00 272.00
- kurtosis_picth_dumbbell  1     0.00 272.00
- amplitude_roll_belt      1     0.00 272.00
- avg_roll_arm             1     0.00 272.00
- skewness_yaw_arm         1     0.00 272.00
- var_roll_dumbbell        1     0.00 272.00
- amplitude_roll_arm       1     0.00 272.00
- min_roll_arm             1     0.00 272.00
- max_roll_arm             1     0.00 272.00
- stddev_roll_forearm      1     0.00 272.00
- skewness_pitch_forearm   1     0.00 272.00
- skewness_roll_forearm    1     0.00 272.00
- var_roll_forearm         1     0.00 272.00
- gyros_dumbbell_y         1     0.00 272.00
- kurtosis_picth_forearm   1     0.00 272.00
- kurtosis_yaw_arm         1     0.00 272.00
- max_picth_belt           1     0.00 272.00
- stddev_roll_dumbbell     1     0.00 272.00
- var_roll_belt            1     0.00 272.00
- stddev_yaw_arm           1     0.00 272.00
- stddev_yaw_forearm       1     0.00 272.00
- stddev_yaw_dumbbell      1     0.00 272.00
- var_pitch_arm            1     0.00 272.00
- kurtosis_roll_forearm    1     0.00 272.00
- magnet_dumbbell_z        1     0.00 272.00
- skewness_roll_belt.1     1     0.00 272.00
- var_yaw_forearm          1     0.00 272.00
```

- skewness_roll_arm 1 0.00 272.00
- skewness_pitch_dumbbell 1 0.00 272.00
- var_accel_forearm 1 0.00 272.00
- stddev_yaw_belt 1 0.00 272.00
- amplitude_yaw_forearm 1 0.00 272.00
- var_roll_arm 1 0.00 272.00
- stddev_roll_belt 1 0.00 272.00
- skewness_roll_dumbbell 1 0.00 272.00
- avg_yaw_dumbbell 1 0.00 272.00
- kurtosis_picth_belt 1 0.00 272.00
- gyros_belt_x 1 0.00 272.00
- stddev_pitch_arm 1 0.00 272.00
- avg_pitch_belt 1 0.00 272.00
- min_pitch_belt 1 0.00 272.00
- skewness_pitch_arm 1 0.00 272.00
- avg_pitch_dumbbell 1 0.00 272.00
- max_yaw_arm 1 0.00 272.00
- stddev_roll_arm 1 0.00 272.00
- avg_yaw_forearm 1 0.00 272.00
- max_roll_dumbbell 1 0.00 272.00
- amplitude_roll_dumbbell 1 0.00 272.00
- min_roll_dumbbell 1 0.00 272.00
- avg_pitch_arm 1 0.00 272.00
- min_pitch_forearm 1 0.00 272.00
- avg_yaw_arm 1 0.00 272.00
- avg_roll_forearm 1 0.00 272.00
- var_total_accel_belt 1 0.00 272.00
- new_window 1 0.00 272.00
- max_roll_forearm 1 0.00 272.00
- min_roll_forearm 1 0.00 272.00
- var_pitch_forearm 1 0.00 272.00
- amplitude_roll_forearm 1 0.00 272.00
- max_yaw_belt 1 0.00 272.00
- min_yaw_arm 1 0.00 272.00
- kurtosis_roll_belt 1 0.00 272.00
- skewness_roll_belt 1 0.00 272.00
- stddev_pitch_belt 1 0.00 272.00
- stddev_pitch_forearm 1 0.00 272.00
- max_picth_arm 1 0.00 272.00
- var_pitch_belt 1 0.00 272.00
- yaw_arm 1 0.00 272.00
- var_accel_arm 1 0.00 272.00
- accel_belt_z 1 0.00 272.00
- gyros_dumbbell_x 1 0.00 272.00
- accel_belt_x 1 0.00 272.00
- total_accel_arm 1 0.00 272.00
- magnet_dumbbell_x 1 0.00 272.00
- gyros_dumbbell_z 1 0.00 272.00
- gyros_belt_z 1 0.00 272.00
- roll_belt 1 0.00 272.00
- magnet_belt_y 1 0.00 272.00
- gyros_forearm_x 1 0.00 272.00
- magnet_forearm_y 1 0.00 272.00
- gyros_arm_x 1 0.00 272.00
- yaw_forearm 1 0.00 272.00
- yaw_dumbbell 1 0.00 272.00
- roll_arm 1 0.00 272.00

```
- gyros_arm_y               1     0.00 272.00
- magnet_arm_z              1     0.00 272.00
- accel_dumbbell_z          1     0.00 272.00
- accel_dumbbell_y          1     0.00 272.00
- magnet_arm_x              1     0.00 272.00
- total_accel_forearm       1     0.00 272.00
- var_accel_dumbbell        1     0.00 272.00
- user_name                 1     0.00 272.00
- gyros_arm_z               1     0.00 272.00
- total_accel_belt          1     0.00 272.00
- magnet_belt_x             1     0.00 272.00
- pitch_belt                1     0.00 272.00
- cvtd_timestamp            1     0.00 272.00
- accel_belt_y              1     0.00 272.00
- total_accel_dumbbell      1     0.00 272.00
- roll_dumbbell             1     0.00 272.00
- accel_forearm_x           1     0.00 272.00
- accel_dumbbell_x          1     0.00 272.00
- raw_timestamp_part_2      1     0.00 272.00
- raw_timestamp_part_1      1     0.00 272.00
- accel_forearm_y           1     0.00 272.00
- magnet_belt_z             1     0.00 272.00
- pitch_dumbbell            1     0.00 272.00
- gyros_forearm_y           1     0.00 272.00
- pitch_forearm             1     0.00 272.00
- accel_forearm_z           1     0.00 272.00
- accel_arm_x               1     0.00 272.00
- gyros_forearm_z           1     0.00 272.00
- accel_arm_z               1     0.00 272.00
- magnet_forearm_x          1     0.00 272.00
- magnet_forearm_z          1     0.00 272.00
- accel_arm_y               1     0.00 272.00
- pitch_arm                 1     0.00 272.00
- magnet_arm_y              1     0.00 272.00
- num_window                1     0.00 272.00
- kurtosis_roll_arm         1     0.00 272.00
- gyros_belt_y              1     0.41 272.41
<none>                            0.00 274.00
- max_yaw_forearm           1   432.52 704.52

Step:  AIC=272
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
```

```
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + amplitude_roll_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    stddev_roll_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    var_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_roll_forearm + kurtosis_picth_fore
arm +
    skewness_roll_forearm + skewness_pitch_forearm + max_roll_forearm +
    max_picth_forearm + max_yaw_forearm + min_roll_forearm +
    min_pitch_forearm + amplitude_roll_forearm + amplitude_yaw_forearm +
    total_accel_forearm + var_accel_forearm + avg_roll_forearm +
    stddev_roll_forearm + var_roll_forearm + avg_pitch_forearm +
    stddev_pitch_forearm + var_pitch_forearm + avg_yaw_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df Deviance    AIC
- var_pitch_dumbbell       1    0.000 270.00
- var_yaw_belt             1    0.000 270.00
- avg_roll_belt            1    0.000 270.00
- avg_pitch_forearm        1    0.000 270.00
- magnet_dumbbell_y        1    0.000 270.00
- max_picth_forearm        1    0.000 270.00
- amplitude_pitch_dumbbell 1    0.000 270.00
- min_pitch_dumbbell       1    0.000 270.00
- max_picth_dumbbell       1    0.000 270.00
- min_roll_belt            1    0.000 270.00
- var_yaw_arm              1    0.000 270.00
- max_roll_belt            1    0.000 270.00
- max_yaw_dumbbell         1    0.000 270.00
- kurtosis_roll_dumbbell   1    0.000 270.00
- kurtosis_picth_dumbbell  1    0.000 270.00
- avg_roll_arm             1    0.000 270.00
- amplitude_roll_arm       1    0.000 270.00
- var_roll_dumbbell        1    0.000 270.00
- skewness_yaw_arm         1    0.000 270.00
- min_roll_arm             1    0.000 270.00
- max_roll_arm             1    0.000 270.00
- amplitude_roll_belt      1    0.000 270.00
- skewness_roll_forearm    1    0.000 270.00
- stddev_yaw_dumbbell      1    0.000 270.00
- gyros_dumbbell_y         1    0.000 270.00
- var_roll_belt            1    0.000 270.00
- kurtosis_yaw_arm         1    0.000 270.00
- skewness_pitch_forearm   1    0.000 270.00
- max_picth_belt           1    0.000 270.00
- var_roll_forearm         1    0.000 270.00
- stddev_yaw_arm           1    0.000 270.00
```

- stddev_roll_forearm 1 0.000 270.00
- stddev_yaw_forearm 1 0.000 270.00
- var_pitch_arm 1 0.000 270.00
- kurtosis_picth_forearm 1 0.000 270.00
- kurtosis_roll_forearm 1 0.000 270.00
- magnet_dumbbell_z 1 0.000 270.00
- var_yaw_forearm 1 0.000 270.00
- var_roll_arm 1 0.000 270.00
- skewness_pitch_dumbbell 1 0.000 270.00
- skewness_roll_arm 1 0.000 270.00
- max_yaw_forearm 1 0.000 270.00
- stddev_roll_belt 1 0.000 270.00
- avg_yaw_dumbbell 1 0.000 270.00
- stddev_yaw_belt 1 0.000 270.00
- skewness_roll_dumbbell 1 0.000 270.00
- amplitude_yaw_forearm 1 0.000 270.00
- kurtosis_picth_belt 1 0.000 270.00
- skewness_roll_belt.1 1 0.000 270.00
- var_accel_forearm 1 0.000 270.00
- gyros_belt_x 1 0.000 270.00
- var_accel_dumbbell 1 0.000 270.00
- avg_pitch_belt 1 0.000 270.00
- stddev_roll_arm 1 0.000 270.00
- min_pitch_belt 1 0.000 270.00
- stddev_roll_dumbbell 1 0.000 270.00
- stddev_pitch_arm 1 0.000 270.00
- var_total_accel_belt 1 0.000 270.00
- avg_pitch_dumbbell 1 0.000 270.00
- avg_yaw_forearm 1 0.000 270.00
- max_roll_forearm 1 0.000 270.00
- min_pitch_forearm 1 0.000 270.00
- amplitude_roll_forearm 1 0.000 270.00
- min_roll_forearm 1 0.000 270.00
- new_window 1 0.000 270.00
- var_pitch_forearm 1 0.000 270.00
- avg_yaw_arm 1 0.000 270.00
- avg_roll_forearm 1 0.000 270.00
- skewness_pitch_arm 1 0.000 270.00
- max_picth_arm 1 0.000 270.00
- max_yaw_arm 1 0.000 270.00
- skewness_roll_belt 1 0.000 270.00
- kurtosis_roll_arm 1 0.000 270.00
- max_yaw_belt 1 0.000 270.00
- stddev_pitch_belt 1 0.000 270.00
- kurtosis_roll_belt 1 0.000 270.00
- var_pitch_belt 1 0.000 270.00
- yaw_arm 1 0.000 270.00
- stddev_pitch_forearm 1 0.000 270.00
- min_yaw_arm 1 0.000 270.00
- accel_belt_z 1 0.000 270.00
- var_accel_arm 1 0.000 270.00
- gyros_dumbbell_x 1 0.000 270.00
- accel_belt_x 1 0.000 270.00
- total_accel_arm 1 0.000 270.00
- magnet_dumbbell_x 1 0.000 270.00
- gyros_dumbbell_z 1 0.000 270.00
- gyros_belt_z 1 0.000 270.00

```
- magnet_belt_y             1    0.000 270.00
- roll_belt                 1    0.000 270.00
- gyros_forearm_x           1    0.000 270.00
- magnet_forearm_y          1    0.000 270.00
- gyros_arm_x               1    0.000 270.00
- yaw_forearm               1    0.000 270.00
- yaw_dumbbell              1    0.000 270.00
- roll_arm                  1    0.000 270.00
- gyros_arm_y               1    0.000 270.00
- magnet_arm_z              1    0.000 270.00
- accel_dumbbell_z          1    0.000 270.00
- accel_dumbbell_y          1    0.000 270.00
- magnet_arm_x              1    0.000 270.00
- total_accel_forearm       1    0.000 270.00
- user_name                 1    0.000 270.00
- gyros_arm_z               1    0.000 270.00
- total_accel_belt          1    0.000 270.00
- magnet_belt_x             1    0.000 270.00
- pitch_belt                1    0.000 270.00
- cvtd_timestamp            1    0.000 270.00
- accel_belt_y              1    0.000 270.00
- total_accel_dumbbell      1    0.000 270.00
- gyros_belt_y              1    0.000 270.00
- roll_dumbbell             1    0.000 270.00
- accel_forearm_x           1    0.000 270.00
- accel_dumbbell_x          1    0.000 270.00
- raw_timestamp_part_2      1    0.000 270.00
- raw_timestamp_part_1      1    0.000 270.00
- accel_forearm_y           1    0.000 270.00
- magnet_belt_z             1    0.000 270.00
- pitch_dumbbell            1    0.000 270.00
- gyros_forearm_y           1    0.000 270.00
- pitch_forearm             1    0.000 270.00
- accel_forearm_z           1    0.000 270.00
- accel_arm_x               1    0.000 270.00
- gyros_forearm_z           1    0.000 270.00
- accel_arm_z               1    0.000 270.00
- magnet_forearm_x          1    0.000 270.00
- magnet_forearm_z          1    0.000 270.00
- accel_arm_y               1    0.000 270.00
- magnet_arm_y              1    0.000 270.00
- max_roll_dumbbell         1    0.000 270.00
- pitch_arm                 1    0.000 270.00
- avg_pitch_arm             1    0.000 270.00
- num_window                1    0.000 270.00
- amplitude_roll_dumbbell   1    0.001 270.00
<none>                           0.000 272.00
- min_roll_dumbbell         1   72.087 342.09

Step:  AIC=270
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
```

```
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + amplitude_roll_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    stddev_roll_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_picth_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- max_picth_forearm        1 0.00000033 268
- avg_pitch_forearm        1 0.00000033 268
- avg_roll_belt            1 0.00000033 268
- var_yaw_belt             1 0.00000033 268
- magnet_dumbbell_y        1 0.00000033 268
- min_roll_belt            1 0.00000033 268
- max_roll_belt            1 0.00000033 268
- amplitude_pitch_dumbbell 1 0.00000033 268
- var_yaw_arm              1 0.00000033 268
- min_pitch_dumbbell       1 0.00000033 268
- max_picth_dumbbell       1 0.00000033 268
- max_yaw_dumbbell         1 0.00000033 268
- kurtosis_roll_dumbbell   1 0.00000033 268
- amplitude_roll_belt      1 0.00000033 268
- kurtosis_picth_dumbbell  1 0.00000033 268
- var_roll_dumbbell        1 0.00000033 268
- skewness_yaw_arm         1 0.00000033 268
- avg_roll_arm             1 0.00000033 268
- max_picth_belt           1 0.00000033 268
- var_roll_belt            1 0.00000033 268
- max_roll_arm             1 0.00000033 268
- min_roll_arm             1 0.00000033 268
- amplitude_roll_arm       1 0.00000033 268
```

- gyros_dumbbell_y 1 0.00000033 268
- kurtosis_yaw_arm 1 0.00000033 268
- stddev_yaw_dumbbell 1 0.00000033 268
- var_roll_forearm 1 0.00000033 268
- stddev_roll_dumbbell 1 0.00000033 268
- stddev_yaw_arm 1 0.00000033 268
- stddev_yaw_forearm 1 0.00000033 268
- skewness_pitch_forearm 1 0.00000033 268
- stddev_roll_forearm 1 0.00000033 268
- kurtosis_picth_forearm 1 0.00000033 268
- var_pitch_arm 1 0.00000033 268
- var_yaw_forearm 1 0.00000033 268
- kurtosis_roll_forearm 1 0.00000033 268
- magnet_dumbbell_z 1 0.00000033 268
- var_roll_arm 1 0.00000033 268
- max_yaw_forearm 1 0.00000033 268
- skewness_roll_arm 1 0.00000033 268
- skewness_pitch_dumbbell 1 0.00000033 268
- stddev_roll_belt 1 0.00000033 268
- min_pitch_belt 1 0.00000033 268
- skewness_roll_belt.1 1 0.00000033 268
- stddev_yaw_belt 1 0.00000033 268
- amplitude_yaw_forearm 1 0.00000033 268
- avg_yaw_dumbbell 1 0.00000033 268
- gyros_belt_x 1 0.00000033 268
- kurtosis_picth_belt 1 0.00000033 268
- var_accel_forearm 1 0.00000033 268
- var_accel_dumbbell 1 0.00000033 268
- stddev_roll_arm 1 0.00000033 268
- avg_pitch_arm 1 0.00000033 268
- stddev_pitch_arm 1 0.00000033 268
- avg_pitch_dumbbell 1 0.00000033 268
- min_pitch_forearm 1 0.00000033 268
- skewness_roll_dumbbell 1 0.00000033 268
- var_total_accel_belt 1 0.00000033 268
- avg_yaw_forearm 1 0.00000033 268
- min_roll_forearm 1 0.00000033 268
- max_roll_forearm 1 0.00000033 268
- amplitude_roll_forearm 1 0.00000033 268
- new_window 1 0.00000033 268
- avg_yaw_arm 1 0.00000033 268
- var_pitch_forearm 1 0.00000033 268
- avg_roll_forearm 1 0.00000033 268
- max_yaw_arm 1 0.00000033 268
- skewness_roll_belt 1 0.00000033 268
- max_picth_arm 1 0.00000033 268
- stddev_pitch_belt 1 0.00000033 268
- max_yaw_belt 1 0.00000033 268
- stddev_pitch_forearm 1 0.00000033 268
- yaw_arm 1 0.00000033 268
- kurtosis_roll_arm 1 0.00000033 268
- var_pitch_belt 1 0.00000033 268
- kurtosis_roll_belt 1 0.00000033 268
- min_yaw_arm 1 0.00000033 268
- accel_belt_z 1 0.00000033 268
- var_accel_arm 1 0.00000033 268
- gyros_dumbbell_x 1 0.00000033 268

```
- accel_belt_x              1 0.00000034 268
- total_accel_arm           1 0.00000034 268
- magnet_dumbbell_x         1 0.00000034 268
- gyros_dumbbell_z          1 0.00000034 268
- roll_belt                 1 0.00000034 268
- gyros_belt_z              1 0.00000034 268
- magnet_belt_y             1 0.00000034 268
- gyros_forearm_x           1 0.00000034 268
- magnet_forearm_y          1 0.00000034 268
- gyros_arm_x               1 0.00000034 268
- yaw_forearm               1 0.00000034 268
- yaw_dumbbell              1 0.00000034 268
- roll_arm                  1 0.00000034 268
- gyros_arm_y               1 0.00000034 268
- magnet_arm_z              1 0.00000034 268
- accel_dumbbell_z          1 0.00000034 268
- accel_dumbbell_y          1 0.00000034 268
- magnet_arm_x              1 0.00000034 268
- total_accel_forearm       1 0.00000034 268
- user_name                 1 0.00000034 268
- gyros_arm_z               1 0.00000034 268
- total_accel_belt          1 0.00000034 268
- magnet_belt_x             1 0.00000034 268
- pitch_belt                1 0.00000034 268
- cvtd_timestamp            1 0.00000034 268
- accel_belt_y              1 0.00000034 268
- total_accel_dumbbell      1 0.00000034 268
- gyros_belt_y              1 0.00000034 268
- roll_dumbbell             1 0.00000034 268
- accel_forearm_x           1 0.00000034 268
- accel_dumbbell_x          1 0.00000034 268
- raw_timestamp_part_2      1 0.00000034 268
- raw_timestamp_part_1      1 0.00000034 268
- accel_forearm_y           1 0.00000034 268
- magnet_belt_z             1 0.00000034 268
- pitch_dumbbell            1 0.00000034 268
- gyros_forearm_y           1 0.00000034 268
- pitch_forearm             1 0.00000034 268
- accel_forearm_z           1 0.00000034 268
- accel_arm_x               1 0.00000034 268
- gyros_forearm_z           1 0.00000035 268
- accel_arm_z               1 0.00000035 268
- magnet_forearm_x          1 0.00000036 268
- magnet_forearm_z          1 0.00000036 268
- magnet_arm_y              1 0.00000037 268
- accel_arm_y               1 0.00000038 268
- pitch_arm                 1 0.00000041 268
- skewness_roll_forearm     1 0.00000046 268
- num_window                1 0.00000061 268
- skewness_pitch_arm        1 0.00000165 268
- min_roll_dumbbell         1 0.00000299 268
- max_roll_dumbbell         1 0.00000318 268
- amplitude_roll_dumbbell   1 0.00000337 268
- avg_pitch_belt            1 0.00041081 268
<none>                        0.00000033 270

Step:  AIC=268
```

```
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + kurtosis_yaw_arm + skewness_roll_arm +
    skewness_pitch_arm + skewness_yaw_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + amplitude_roll_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    stddev_roll_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z


             Df Deviance AIC
- kurtosis_yaw_arm          1 3.34e-07 266
- var_roll_dumbbell         1 3.34e-07 266
- kurtosis_roll_dumbbell    1 3.34e-07 266
- max_yaw_dumbbell          1 3.34e-07 266
- avg_pitch_forearm         1 3.34e-07 266
- avg_roll_belt             1 3.34e-07 266
- max_picth_belt            1 3.34e-07 266
- magnet_dumbbell_y         1 3.34e-07 266
- skewness_yaw_arm          1 3.34e-07 266
- stddev_yaw_dumbbell       1 3.34e-07 266
- var_yaw_arm               1 3.34e-07 266
- var_roll_belt             1 3.34e-07 266
- stddev_roll_dumbbell      1 3.34e-07 266
- amplitude_roll_arm        1 3.34e-07 266
- min_roll_arm              1 3.34e-07 266
```

- max_roll_arm 1 3.34e-07 266
- skewness_pitch_forearm 1 3.34e-07 266
- var_roll_forearm 1 3.34e-07 266
- kurtosis_picth_dumbbell 1 3.34e-07 266
- min_roll_belt 1 3.34e-07 266
- max_roll_belt 1 3.34e-07 266
- stddev_roll_forearm 1 3.34e-07 266
- skewness_roll_forearm 1 3.34e-07 266
- amplitude_roll_belt 1 3.34e-07 266
- var_yaw_belt 1 3.34e-07 266
- stddev_yaw_arm 1 3.34e-07 266
- kurtosis_roll_forearm 1 3.34e-07 266
- var_roll_arm 1 3.34e-07 266
- gyros_dumbbell_y 1 3.34e-07 266
- var_pitch_arm 1 3.34e-07 266
- max_yaw_forearm 1 3.34e-07 266
- skewness_roll_arm 1 3.34e-07 266
- kurtosis_picth_forearm 1 3.34e-07 266
- amplitude_pitch_dumbbell 1 3.34e-07 266
- min_pitch_dumbbell 1 3.34e-07 266
- max_picth_dumbbell 1 3.34e-07 266
- stddev_roll_belt 1 3.34e-07 266
- skewness_roll_belt.1 1 3.34e-07 266
- avg_roll_arm 1 3.34e-07 266
- var_accel_forearm 1 3.34e-07 266
- magnet_dumbbell_z 1 3.34e-07 266
- avg_yaw_dumbbell 1 3.34e-07 266
- avg_pitch_arm 1 3.34e-07 266
- skewness_pitch_dumbbell 1 3.34e-07 266
- min_pitch_belt 1 3.34e-07 266
- kurtosis_picth_belt 1 3.34e-07 266
- var_total_accel_belt 1 3.34e-07 266
- min_roll_dumbbell 1 3.34e-07 266
- amplitude_roll_dumbbell 1 3.34e-07 266
- stddev_yaw_belt 1 3.34e-07 266
- max_roll_dumbbell 1 3.34e-07 266
- avg_pitch_belt 1 3.34e-07 266
- stddev_roll_arm 1 3.34e-07 266
- avg_pitch_dumbbell 1 3.34e-07 266
- stddev_pitch_arm 1 3.34e-07 266
- gyros_belt_x 1 3.34e-07 266
- skewness_roll_dumbbell 1 3.34e-07 266
- var_accel_dumbbell 1 3.34e-07 266
- var_pitch_forearm 1 3.34e-07 266
- avg_roll_forearm 1 3.34e-07 266
- max_roll_forearm 1 3.34e-07 266
- new_window 1 3.34e-07 266
- min_roll_forearm 1 3.34e-07 266
- amplitude_roll_forearm 1 3.34e-07 266
- skewness_pitch_arm 1 3.34e-07 266
- max_picth_arm 1 3.34e-07 266
- max_yaw_belt 1 3.34e-07 266
- kurtosis_roll_belt 1 3.34e-07 266
- kurtosis_roll_arm 1 3.34e-07 266
- var_pitch_belt 1 3.34e-07 266
- var_yaw_forearm 1 3.34e-07 266
- min_pitch_forearm 1 3.34e-07 266

- yaw_arm 1 3.34e-07 266
- stddev_pitch_forearm 1 3.34e-07 266
- min_yaw_arm 1 3.34e-07 266
- max_yaw_arm 1 3.34e-07 266
- avg_yaw_forearm 1 3.34e-07 266
- accel_belt_z 1 3.34e-07 266
- var_accel_arm 1 3.34e-07 266
- stddev_yaw_forearm 1 3.35e-07 266
- gyros_dumbbell_x 1 3.35e-07 266
- accel_belt_x 1 3.35e-07 266
- total_accel_arm 1 3.35e-07 266
- gyros_dumbbell_z 1 3.35e-07 266
- stddev_pitch_belt 1 3.35e-07 266
- magnet_dumbbell_x 1 3.35e-07 266
- gyros_belt_z 1 3.36e-07 266
- magnet_belt_y 1 3.36e-07 266
- roll_belt 1 3.36e-07 266
- gyros_arm_x 1 3.36e-07 266
- gyros_forearm_x 1 3.36e-07 266
- magnet_forearm_y 1 3.36e-07 266
- yaw_forearm 1 3.36e-07 266
- yaw_dumbbell 1 3.36e-07 266
- roll_arm 1 3.36e-07 266
- gyros_arm_y 1 3.36e-07 266
- magnet_arm_z 1 3.36e-07 266
- accel_dumbbell_z 1 3.37e-07 266
- accel_dumbbell_y 1 3.37e-07 266
- avg_yaw_arm 1 3.37e-07 266
- magnet_arm_x 1 3.37e-07 266
- total_accel_forearm 1 3.37e-07 266
- user_name 1 3.38e-07 266
- gyros_arm_z 1 3.38e-07 266
- total_accel_belt 1 3.39e-07 266
- magnet_belt_x 1 3.39e-07 266
- pitch_belt 1 3.39e-07 266
- cvtd_timestamp 1 3.39e-07 266
- accel_belt_y 1 3.39e-07 266
- total_accel_dumbbell 1 3.40e-07 266
- gyros_belt_y 1 3.42e-07 266
- roll_dumbbell 1 3.42e-07 266
- accel_forearm_x 1 3.42e-07 266
- accel_dumbbell_x 1 3.42e-07 266
- raw_timestamp_part_2 1 3.42e-07 266
- raw_timestamp_part_1 1 3.42e-07 266
- accel_forearm_y 1 3.43e-07 266
- magnet_belt_z 1 3.43e-07 266
- pitch_dumbbell 1 3.43e-07 266
- gyros_forearm_y 1 3.43e-07 266
- pitch_forearm 1 3.43e-07 266
- accel_forearm_z 1 3.44e-07 266
- accel_arm_x 1 3.44e-07 266
- gyros_forearm_z 1 3.48e-07 266
- accel_arm_z 1 3.50e-07 266
- magnet_forearm_x 1 3.57e-07 266
- amplitude_yaw_forearm 1 3.59e-07 266
- magnet_forearm_z 1 3.62e-07 266
- magnet_arm_y 1 3.74e-07 266

```
- accel_arm_y               1 3.83e-07 266
- pitch_arm                 1 4.12e-07 266
- num_window                1 6.08e-07 266
- skewness_roll_belt        1 1.57e-04 266
<none>                        3.34e-07 268

Step:  AIC=266
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + skewness_roll_arm + skewness_pitch_arm
+
    skewness_yaw_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + amplitude_roll_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + kurtosis_roll_dumbbell +
    kurtosis_picth_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbel
l +
    max_roll_dumbbell + max_picth_dumbbell + max_yaw_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    stddev_roll_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df Deviance   AIC
- skewness_yaw_arm         1        0   264
- stddev_roll_dumbbell     1        0   264
- var_roll_belt            1        0   264
- kurtosis_roll_dumbbell   1        0   264
- max_yaw_dumbbell         1        0   264
- var_roll_dumbbell        1        0   264
- stddev_yaw_dumbbell      1        0   264
- var_yaw_arm              1        0   264
```

- min_roll_arm 1 0 264
- amplitude_roll_arm 1 0 264
- magnet_dumbbell_y 1 0 264
- max_roll_arm 1 0 264
- max_picth_belt 1 0 264
- min_roll_belt 1 0 264
- max_roll_belt 1 0 264
- skewness_pitch_forearm 1 0 264
- kurtosis_picth_dumbbell 1 0 264
- stddev_roll_forearm 1 0 264
- var_pitch_arm 1 0 264
- skewness_roll_forearm 1 0 264
- avg_pitch_forearm 1 0 264
- kurtosis_roll_forearm 1 0 264
- var_yaw_belt 1 0 264
- gyros_dumbbell_y 1 0 264
- avg_roll_belt 1 0 264
- amplitude_roll_belt 1 0 264
- max_yaw_forearm 1 0 264
- kurtosis_picth_forearm 1 0 264
- skewness_roll_arm 1 0 264
- stddev_yaw_arm 1 0 264
- var_roll_forearm 1 0 264
- avg_yaw_dumbbell 1 0 264
- amplitude_pitch_dumbbell 1 0 264
- avg_pitch_arm 1 0 264
- min_pitch_dumbbell 1 0 264
- skewness_roll_belt.1 1 0 264
- max_picth_dumbbell 1 0 264
- stddev_roll_belt 1 0 264
- stddev_yaw_belt 1 0 264
- amplitude_yaw_forearm 1 0 264
- avg_roll_arm 1 0 264
- stddev_roll_arm 1 0 264
- min_pitch_belt 1 0 264
- kurtosis_picth_belt 1 0 264
- avg_pitch_belt 1 0 264
- stddev_pitch_arm 1 0 264
- gyros_belt_x 1 0 264
- var_accel_dumbbell 1 0 264
- magnet_dumbbell_z 1 0 264
- var_pitch_forearm 1 0 264
- avg_pitch_dumbbell 1 0 264
- max_yaw_arm 1 0 264
- skewness_pitch_arm 1 0 264
- min_roll_dumbbell 1 0 264
- new_window 1 0 264
- stddev_pitch_forearm 1 0 264
- kurtosis_roll_arm 1 0 264
- amplitude_roll_dumbbell 1 0 264
- var_total_accel_belt 1 0 264
- var_pitch_belt 1 0 264
- max_roll_dumbbell 1 0 264
- skewness_roll_belt 1 0 264
- stddev_pitch_belt 1 0 264
- max_picth_arm 1 0 264
- stddev_yaw_forearm 1 0 264

- min_yaw_arm 1 0 264
- yaw_arm 1 0 264
- avg_yaw_arm 1 0 264
- kurtosis_roll_belt 1 0 264
- accel_belt_z 1 0 264
- max_yaw_belt 1 0 264
- min_roll_forearm 1 0 264
- max_roll_forearm 1 0 264
- skewness_pitch_dumbbell 1 0 264
- amplitude_roll_forearm 1 0 264
- gyros_dumbbell_x 1 0 264
- var_yaw_forearm 1 0 264
- accel_belt_x 1 0 264
- skewness_roll_dumbbell 1 0 264
- gyros_dumbbell_z 1 0 264
- magnet_dumbbell_x 1 0 264
- roll_belt 1 0 264
- gyros_belt_z 1 0 264
- magnet_belt_y 1 0 264
- var_roll_arm 1 0 264
- gyros_forearm_x 1 0 264
- gyros_arm_x 1 0 264
- magnet_forearm_y 1 0 264
- yaw_forearm 1 0 264
- yaw_dumbbell 1 0 264
- roll_arm 1 0 264
- gyros_arm_y 1 0 264
- avg_roll_forearm 1 0 264
- magnet_arm_z 1 0 264
- accel_dumbbell_z 1 0 264
- var_accel_forearm 1 0 264
- accel_dumbbell_y 1 0 264
- magnet_arm_x 1 0 264
- total_accel_forearm 1 0 264
- user_name 1 0 264
- gyros_arm_z 1 0 264
- total_accel_belt 1 0 264
- magnet_belt_x 1 0 264
- pitch_belt 1 0 264
- cvtd_timestamp 1 0 264
- accel_belt_y 1 0 264
- total_accel_dumbbell 1 0 264
- gyros_belt_y 1 0 264
- roll_dumbbell 1 0 264
- accel_forearm_x 1 0 264
- accel_dumbbell_x 1 0 264
- raw_timestamp_part_2 1 0 264
- raw_timestamp_part_1 1 0 264
- magnet_belt_z 1 0 264
- accel_forearm_y 1 0 264
- min_pitch_forearm 1 0 264
- pitch_dumbbell 1 0 264
- pitch_forearm 1 0 264
- gyros_forearm_y 1 0 264
- accel_arm_x 1 0 264
- accel_forearm_z 1 0 264
- gyros_forearm_z 1 0 264

```
- accel_arm_z               1        0   264
- magnet_forearm_x          1        0   264
- magnet_forearm_z          1        0   264
- var_accel_arm             1        0   264
- magnet_arm_y              1        0   264
- accel_arm_y               1        0   264
- pitch_arm                 1        0   264
- total_accel_arm           1        0   264
- num_window                1        0   264
<none>                              0   266
- avg_yaw_forearm           1    44694 44958

Step:  AIC=264
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + avg_roll_belt +
    stddev_roll_belt + var_roll_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + var_roll_arm + avg_pitch_arm +
    stddev_pitch_arm + var_pitch_arm + avg_yaw_arm + stddev_yaw_arm +
    var_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    magnet_arm_z + kurtosis_roll_arm + skewness_roll_arm + skewness_pitch_arm
+
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + amplitude_roll_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + kurtosis_roll_dumbbell + kurtosis_picth_dumbbell +
    skewness_roll_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_accel_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + avg_yaw_dumbbell +
    stddev_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_yaw_forearm + min_roll_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z
     Df   Deviance AIC
- avg_roll_belt             1 3.3378e-07 262
- stddev_roll_dumbbell      1 3.3378e-07 262
- var_roll_belt             1 3.3379e-07 262
- stddev_yaw_dumbbell       1 3.3380e-07 262
```

- kurtosis_roll_dumbbell   1 3.3380e-07 262
- max_yaw_dumbbell   1 3.3380e-07 262
- var_roll_dumbbell   1 3.3381e-07 262
- var_yaw_arm   1 3.3381e-07 262
- magnet_dumbbell_y   1 3.3381e-07 262
- kurtosis_picth_dumbbell   1 3.3381e-07 262
- amplitude_roll_arm   1 3.3382e-07 262
- min_roll_arm   1 3.3382e-07 262
- max_roll_arm   1 3.3382e-07 262
- max_picth_belt   1 3.3382e-07 262
- var_roll_forearm   1 3.3383e-07 262
- stddev_roll_forearm   1 3.3383e-07 262
- min_roll_belt   1 3.3384e-07 262
- max_roll_belt   1 3.3384e-07 262
- amplitude_roll_belt   1 3.3384e-07 262
- skewness_roll_forearm   1 3.3385e-07 262
- skewness_pitch_forearm   1 3.3385e-07 262
- kurtosis_roll_forearm   1 3.3385e-07 262
- gyros_dumbbell_y   1 3.3386e-07 262
- avg_pitch_forearm   1 3.3386e-07 262
- var_roll_arm   1 3.3387e-07 262
- stddev_roll_belt   1 3.3387e-07 262
- var_yaw_belt   1 3.3387e-07 262
- kurtosis_picth_forearm   1 3.3389e-07 262
- kurtosis_picth_belt   1 3.3389e-07 262
- skewness_roll_arm   1 3.3389e-07 262
- min_roll_dumbbell   1 3.3389e-07 262
- amplitude_roll_dumbbell   1 3.3389e-07 262
- max_roll_dumbbell   1 3.3389e-07 262
- amplitude_pitch_dumbbell 1 3.3390e-07 262
- min_pitch_dumbbell   1 3.3390e-07 262
- max_picth_dumbbell   1 3.3390e-07 262
- avg_pitch_arm   1 3.3390e-07 262
- var_total_accel_belt   1 3.3390e-07 262
- max_yaw_forearm   1 3.3391e-07 262
- stddev_yaw_arm   1 3.3391e-07 262
- skewness_roll_dumbbell   1 3.3391e-07 262
- avg_roll_arm   1 3.3392e-07 262
- amplitude_yaw_forearm   1 3.3392e-07 262
- skewness_roll_belt.1   1 3.3392e-07 262
- stddev_yaw_belt   1 3.3392e-07 262
- magnet_dumbbell_z   1 3.3392e-07 262
- avg_pitch_belt   1 3.3394e-07 262
- avg_yaw_dumbbell   1 3.3395e-07 262
- var_accel_dumbbell   1 3.3396e-07 262
- gyros_belt_x   1 3.3396e-07 262
- var_pitch_forearm   1 3.3400e-07 262
- avg_yaw_arm   1 3.3402e-07 262
- skewness_pitch_arm   1 3.3402e-07 262
- new_window   1 3.3404e-07 262
- max_yaw_arm   1 3.3406e-07 262
- max_picth_arm   1 3.3406e-07 262
- stddev_pitch_forearm   1 3.3408e-07 262
- avg_roll_forearm   1 3.3408e-07 262
- var_accel_forearm   1 3.3408e-07 262
- max_roll_forearm   1 3.3408e-07 262
- min_roll_forearm   1 3.3408e-07 262

- stddev_pitch_arm   1 3.3408e-07 262
- amplitude_roll_forearm   1 3.3409e-07 262
- stddev_pitch_belt   1 3.3409e-07 262
- var_pitch_belt   1 3.3410e-07 262
- max_yaw_belt   1 3.3411e-07 262
- kurtosis_roll_belt   1 3.3411e-07 262
- kurtosis_roll_arm   1 3.3411e-07 262
- skewness_roll_belt   1 3.3411e-07 262
- var_yaw_forearm   1 3.3414e-07 262
- min_yaw_arm   1 3.3414e-07 262
- yaw_arm   1 3.3417e-07 262
- var_accel_arm   1 3.3418e-07 262
- stddev_yaw_forearm   1 3.3420e-07 262
- avg_yaw_forearm   1 3.3421e-07 262
- accel_belt_z   1 3.3425e-07 262
- skewness_pitch_dumbbell   1 3.3468e-07 262
- min_pitch_forearm   1 3.3474e-07 262
- gyros_dumbbell_x   1 3.3474e-07 262
- accel_belt_x   1 3.3511e-07 262
- total_accel_arm   1 3.3529e-07 262
- gyros_dumbbell_z   1 3.3535e-07 262
- magnet_dumbbell_x   1 3.3539e-07 262
- roll_belt   1 3.3563e-07 262
- gyros_belt_z   1 3.3565e-07 262
- magnet_belt_y   1 3.3571e-07 262
- gyros_arm_x   1 3.3586e-07 262
- gyros_forearm_x   1 3.3587e-07 262
- magnet_forearm_y   1 3.3587e-07 262
- yaw_forearm   1 3.3600e-07 262
- yaw_dumbbell   1 3.3603e-07 262
- roll_arm   1 3.3612e-07 262
- gyros_arm_y   1 3.3614e-07 262
- min_pitch_belt   1 3.3637e-07 262
- magnet_arm_z   1 3.3639e-07 262
- accel_dumbbell_z   1 3.3658e-07 262
- accel_dumbbell_y   1 3.3695e-07 262
- magnet_arm_x   1 3.3710e-07 262
- total_accel_forearm   1 3.3732e-07 262
- user_name   1 3.3765e-07 262
- stddev_roll_arm   1 3.3791e-07 262
- gyros_arm_z   1 3.3818e-07 262
- total_accel_belt   1 3.3869e-07 262
- magnet_belt_x   1 3.3899e-07 262
- pitch_belt   1 3.3919e-07 262
- cvtd_timestamp   1 3.3925e-07 262
- accel_belt_y   1 3.3945e-07 262
- total_accel_dumbbell   1 3.4021e-07 262
- gyros_belt_y   1 3.4194e-07 262
- roll_dumbbell   1 3.4201e-07 262
- accel_forearm_x   1 3.4220e-07 262
- accel_dumbbell_x   1 3.4225e-07 262
- raw_timestamp_part_2   1 3.4233e-07 262
- raw_timestamp_part_1   1 3.4239e-07 262
- magnet_belt_z   1 3.4259e-07 262
- accel_forearm_y   1 3.4264e-07 262
- pitch_dumbbell   1 3.4306e-07 262
- gyros_forearm_y   1 3.4306e-07 262

```
- pitch_forearm            1 3.4347e-07 262
- accel_forearm_z          1 3.4396e-07 262
- accel_arm_x              1 3.4426e-07 262
- gyros_forearm_z          1 3.4805e-07 262
- accel_arm_z              1 3.5003e-07 262
- magnet_forearm_x         1 3.5691e-07 262
- magnet_forearm_z         1 3.6194e-07 262
- avg_pitch_dumbbell       1 3.7188e-07 262
- accel_arm_y              1 3.8311e-07 262
- pitch_arm                1 4.1234e-07 262
- var_pitch_arm            1 4.1334e-07 262
- magnet_arm_y             1 4.3376e-07 262
- num_window               1 6.0787e-07 262
<none>                       3.3379e-07 264

Step:  AIC=262
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    var_roll_belt + avg_pitch_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + var_roll_arm + avg_pitch_arm + stddev_pitch_arm +
    var_pitch_arm + avg_yaw_arm + stddev_yaw_arm + var_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + skewness_roll_arm + skewness_pitch_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + amplitude_roll_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + kurtosis_roll_dumbbell + kurtosis_picth_dumbbell +
    skewness_roll_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_accel_dumbbell + stddev_roll_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + avg_yaw_dumbbell +
    stddev_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_yaw_forearm + min_roll_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z


                Df   Deviance AIC
```

- stddev_roll_dumbbell   1 3.3377e-07 260
- stddev_yaw_dumbbell   1 3.3378e-07 260
- var_roll_belt   1 3.3378e-07 260
- var_roll_dumbbell   1 3.3380e-07 260
- var_yaw_arm   1 3.3380e-07 260
- amplitude_roll_arm   1 3.3380e-07 260
- kurtosis_roll_dumbbell   1 3.3380e-07 260
- min_roll_arm   1 3.3380e-07 260
- max_yaw_dumbbell   1 3.3380e-07 260
- max_roll_arm   1 3.3380e-07 260
- kurtosis_picth_dumbbell   1 3.3381e-07 260
- magnet_dumbbell_y   1 3.3381e-07 260
- kurtosis_roll_forearm   1 3.3382e-07 260
- stddev_roll_forearm   1 3.3383e-07 260
- min_roll_belt   1 3.3383e-07 260
- max_roll_belt   1 3.3383e-07 260
- amplitude_roll_belt   1 3.3383e-07 260
- var_roll_forearm   1 3.3383e-07 260
- max_picth_belt   1 3.3384e-07 260
- skewness_roll_forearm   1 3.3384e-07 260
- var_pitch_arm   1 3.3385e-07 260
- stddev_yaw_arm   1 3.3385e-07 260
- gyros_dumbbell_y   1 3.3385e-07 260
- stddev_roll_belt   1 3.3385e-07 260
- avg_pitch_forearm   1 3.3385e-07 260
- skewness_pitch_forearm   1 3.3386e-07 260
- skewness_roll_arm   1 3.3387e-07 260
- var_yaw_belt   1 3.3387e-07 260
- kurtosis_picth_forearm   1 3.3388e-07 260
- avg_pitch_arm   1 3.3389e-07 260
- avg_yaw_dumbbell   1 3.3389e-07 260
- skewness_pitch_dumbbell   1 3.3390e-07 260
- var_roll_arm   1 3.3390e-07 260
- max_yaw_forearm   1 3.3390e-07 260
- avg_roll_arm   1 3.3390e-07 260
- skewness_roll_dumbbell   1 3.3391e-07 260
- min_pitch_belt   1 3.3391e-07 260
- var_accel_forearm   1 3.3391e-07 260
- amplitude_pitch_dumbbell 1 3.3391e-07 260
- min_pitch_dumbbell   1 3.3391e-07 260
- var_total_accel_belt   1 3.3391e-07 260
- max_picth_dumbbell   1 3.3391e-07 260
- stddev_yaw_belt   1 3.3392e-07 260
- min_roll_dumbbell   1 3.3392e-07 260
- magnet_dumbbell_z   1 3.3392e-07 260
- amplitude_roll_dumbbell   1 3.3393e-07 260
- skewness_roll_belt.1   1 3.3394e-07 260
- max_roll_dumbbell   1 3.3395e-07 260
- avg_pitch_dumbbell   1 3.3396e-07 260
- gyros_belt_x   1 3.3396e-07 260
- var_accel_dumbbell   1 3.3396e-07 260
- var_pitch_forearm   1 3.3398e-07 260
- amplitude_yaw_forearm   1 3.3401e-07 260
- avg_yaw_forearm   1 3.3402e-07 260
- new_window   1 3.3403e-07 260
- avg_roll_forearm   1 3.3405e-07 260
- skewness_pitch_arm   1 3.3405e-07 260

- avg_yaw_arm 1 3.3407e-07 260
- max_yaw_arm 1 3.3407e-07 260
- max_picth_arm 1 3.3408e-07 260
- stddev_roll_arm 1 3.3408e-07 260
- stddev_pitch_belt 1 3.3409e-07 260
- var_pitch_belt 1 3.3411e-07 260
- max_yaw_belt 1 3.3413e-07 260
- kurtosis_roll_belt 1 3.3413e-07 260
- skewness_roll_belt 1 3.3415e-07 260
- yaw_arm 1 3.3417e-07 260
- amplitude_roll_forearm 1 3.3418e-07 260
- kurtosis_roll_arm 1 3.3419e-07 260
- stddev_pitch_forearm 1 3.3420e-07 260
- min_yaw_arm 1 3.3421e-07 260
- accel_belt_z 1 3.3425e-07 260
- min_pitch_forearm 1 3.3429e-07 260
- max_roll_forearm 1 3.3429e-07 260
- min_roll_forearm 1 3.3431e-07 260
- var_accel_arm 1 3.3432e-07 260
- avg_pitch_belt 1 3.3433e-07 260
- var_yaw_forearm 1 3.3440e-07 260
- gyros_dumbbell_x 1 3.3473e-07 260
- accel_belt_x 1 3.3510e-07 260
- gyros_dumbbell_z 1 3.3534e-07 260
- total_accel_arm 1 3.3537e-07 260
- magnet_dumbbell_x 1 3.3545e-07 260
- kurtosis_picth_belt 1 3.3554e-07 260
- roll_belt 1 3.3557e-07 260
- gyros_belt_z 1 3.3565e-07 260
- magnet_belt_y 1 3.3571e-07 260
- gyros_arm_x 1 3.3586e-07 260
- magnet_forearm_y 1 3.3588e-07 260
- gyros_forearm_x 1 3.3591e-07 260
- yaw_forearm 1 3.3599e-07 260
- yaw_dumbbell 1 3.3604e-07 260
- stddev_pitch_arm 1 3.3610e-07 260
- roll_arm 1 3.3611e-07 260
- gyros_arm_y 1 3.3615e-07 260
- magnet_arm_z 1 3.3637e-07 260
- accel_dumbbell_z 1 3.3658e-07 260
- accel_dumbbell_y 1 3.3695e-07 260
- magnet_arm_x 1 3.3710e-07 260
- stddev_yaw_forearm 1 3.3717e-07 260
- total_accel_forearm 1 3.3734e-07 260
- user_name 1 3.3765e-07 260
- gyros_arm_z 1 3.3825e-07 260
- total_accel_belt 1 3.3870e-07 260
- magnet_belt_x 1 3.3898e-07 260
- pitch_belt 1 3.3918e-07 260
- cvtd_timestamp 1 3.3925e-07 260
- accel_belt_y 1 3.3944e-07 260
- roll_dumbbell 1 3.4202e-07 260
- gyros_belt_y 1 3.4209e-07 260
- accel_forearm_x 1 3.4218e-07 260
- accel_dumbbell_x 1 3.4230e-07 260
- raw_timestamp_part_1 1 3.4240e-07 260
- accel_forearm_y 1 3.4266e-07 260

```
- magnet_belt_z             1 3.4269e-07 260
- gyros_forearm_y           1 3.4307e-07 260
- pitch_dumbbell            1 3.4308e-07 260
- pitch_forearm             1 3.4354e-07 260
- accel_forearm_z           1 3.4396e-07 260
- raw_timestamp_part_2      1 3.4412e-07 260
- accel_arm_x               1 3.4424e-07 260
- total_accel_dumbbell      1 3.4611e-07 260
- gyros_forearm_z           1 3.4804e-07 260
- accel_arm_z               1 3.5001e-07 260
- magnet_forearm_x          1 3.5693e-07 260
- magnet_forearm_z          1 3.6193e-07 260
- magnet_arm_y              1 3.7448e-07 260
- accel_arm_y               1 3.8292e-07 260
- pitch_arm                 1 4.1239e-07 260
- num_window                1 6.0803e-07 260
<none>                        3.3378e-07 262

Step:  AIC=260
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    var_roll_belt + avg_pitch_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + var_roll_arm + avg_pitch_arm + stddev_pitch_arm +
    var_pitch_arm + avg_yaw_arm + stddev_yaw_arm + var_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + skewness_roll_arm + skewness_pitch_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + amplitude_roll_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + kurtosis_roll_dumbbell + kurtosis_picth_dumbbell +
    skewness_roll_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_accel_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + avg_yaw_dumbbell + stddev_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_roll_forearm + kurtosis_picth_fore
arm +
    skewness_roll_forearm + skewness_pitch_forearm + max_roll_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z
```

```
                            Df   Deviance AIC
- kurtosis_roll_dumbbell     1 3.3376e-07 258
- max_yaw_dumbbell           1 3.3376e-07 258
- var_roll_belt              1 3.3377e-07 258
- stddev_yaw_dumbbell        1 3.3377e-07 258
- amplitude_roll_arm         1 3.3378e-07 258
- min_roll_arm               1 3.3379e-07 258
- max_roll_arm               1 3.3379e-07 258
- kurtosis_picth_dumbbell    1 3.3379e-07 258
- var_yaw_arm                1 3.3379e-07 258
- min_roll_belt              1 3.3380e-07 258
- max_roll_belt              1 3.3380e-07 258
- magnet_dumbbell_y          1 3.3380e-07 258
- max_picth_belt             1 3.3380e-07 258
- amplitude_roll_belt        1 3.3380e-07 258
- kurtosis_roll_forearm      1 3.3382e-07 258
- var_roll_arm               1 3.3383e-07 258
- var_roll_forearm           1 3.3383e-07 258
- skewness_roll_forearm      1 3.3383e-07 258
- stddev_roll_belt           1 3.3383e-07 258
- max_yaw_forearm            1 3.3383e-07 258
- stddev_roll_forearm        1 3.3384e-07 258
- gyros_dumbbell_y           1 3.3384e-07 258
- skewness_roll_arm          1 3.3384e-07 258
- avg_pitch_forearm          1 3.3384e-07 258
- kurtosis_picth_forearm     1 3.3385e-07 258
- var_pitch_arm              1 3.3385e-07 258
- stddev_yaw_arm             1 3.3385e-07 258
- avg_yaw_dumbbell           1 3.3386e-07 258
- skewness_pitch_forearm     1 3.3387e-07 258
- skewness_pitch_dumbbell    1 3.3387e-07 258
- var_yaw_belt               1 3.3387e-07 258
- kurtosis_picth_belt        1 3.3387e-07 258
- var_accel_forearm          1 3.3387e-07 258
- skewness_roll_dumbbell     1 3.3388e-07 258
- amplitude_pitch_dumbbell   1 3.3388e-07 258
- max_picth_dumbbell         1 3.3388e-07 258
- min_pitch_dumbbell         1 3.3388e-07 258
- stddev_roll_arm            1 3.3389e-07 258
- stddev_yaw_belt            1 3.3389e-07 258
- avg_roll_arm               1 3.3389e-07 258
- skewness_roll_belt.1       1 3.3390e-07 258
- avg_pitch_arm              1 3.3390e-07 258
- var_total_accel_belt       1 3.3391e-07 258
- magnet_dumbbell_z          1 3.3391e-07 258
- amplitude_yaw_forearm      1 3.3392e-07 258
- avg_pitch_dumbbell         1 3.3393e-07 258
- min_pitch_belt             1 3.3393e-07 258
- var_accel_dumbbell         1 3.3394e-07 258
- gyros_belt_x               1 3.3395e-07 258
- var_pitch_forearm          1 3.3398e-07 258
- max_roll_dumbbell          1 3.3398e-07 258
- min_roll_dumbbell          1 3.3399e-07 258
- amplitude_roll_dumbbell    1 3.3399e-07 258
- avg_yaw_forearm            1 3.3401e-07 258
```

- var_roll_dumbbell 1 3.3402e-07 258
- skewness_pitch_arm 1 3.3403e-07 258
- avg_yaw_arm 1 3.3403e-07 258
- avg_roll_forearm 1 3.3406e-07 258
- max_yaw_arm 1 3.3406e-07 258
- max_picth_arm 1 3.3407e-07 258
- stddev_pitch_forearm 1 3.3408e-07 258
- new_window 1 3.3409e-07 258
- skewness_roll_belt 1 3.3409e-07 258
- var_yaw_forearm 1 3.3411e-07 258
- var_pitch_belt 1 3.3411e-07 258
- max_roll_forearm 1 3.3413e-07 258
- min_roll_forearm 1 3.3414e-07 258
- amplitude_roll_forearm 1 3.3414e-07 258
- stddev_yaw_forearm 1 3.3414e-07 258
- kurtosis_roll_belt 1 3.3415e-07 258
- max_yaw_belt 1 3.3415e-07 258
- yaw_arm 1 3.3416e-07 258
- kurtosis_roll_arm 1 3.3417e-07 258
- min_pitch_forearm 1 3.3418e-07 258
- min_yaw_arm 1 3.3422e-07 258
- accel_belt_z 1 3.3424e-07 258
- var_accel_arm 1 3.3428e-07 258
- avg_pitch_belt 1 3.3453e-07 258
- gyros_dumbbell_x 1 3.3471e-07 258
- accel_belt_x 1 3.3509e-07 258
- total_accel_arm 1 3.3524e-07 258
- gyros_dumbbell_z 1 3.3530e-07 258
- magnet_dumbbell_x 1 3.3541e-07 258
- stddev_pitch_arm 1 3.3547e-07 258
- stddev_pitch_belt 1 3.3549e-07 258
- gyros_belt_z 1 3.3563e-07 258
- magnet_belt_y 1 3.3570e-07 258
- gyros_arm_x 1 3.3585e-07 258
- roll_belt 1 3.3586e-07 258
- magnet_forearm_y 1 3.3586e-07 258
- gyros_forearm_x 1 3.3588e-07 258
- yaw_forearm 1 3.3597e-07 258
- yaw_dumbbell 1 3.3603e-07 258
- gyros_arm_y 1 3.3613e-07 258
- roll_arm 1 3.3617e-07 258
- magnet_arm_z 1 3.3636e-07 258
- accel_dumbbell_z 1 3.3657e-07 258
- accel_dumbbell_y 1 3.3694e-07 258
- magnet_arm_x 1 3.3712e-07 258
- total_accel_forearm 1 3.3731e-07 258
- user_name 1 3.3765e-07 258
- gyros_arm_z 1 3.3821e-07 258
- total_accel_belt 1 3.3869e-07 258
- magnet_belt_x 1 3.3892e-07 258
- pitch_belt 1 3.3915e-07 258
- cvtd_timestamp 1 3.3924e-07 258
- accel_belt_y 1 3.3943e-07 258
- roll_dumbbell 1 3.4201e-07 258
- accel_forearm_x 1 3.4216e-07 258
- gyros_belt_y 1 3.4219e-07 258
- raw_timestamp_part_2 1 3.4240e-07 258

```
- raw_timestamp_part_1      1 3.4240e-07 258
- accel_dumbbell_x          1 3.4246e-07 258
- magnet_belt_z             1 3.4263e-07 258
- accel_forearm_y           1 3.4266e-07 258
- gyros_forearm_y           1 3.4305e-07 258
- pitch_dumbbell            1 3.4307e-07 258
- accel_forearm_z           1 3.4398e-07 258
- accel_arm_x               1 3.4427e-07 258
- pitch_forearm             1 3.4765e-07 258
- gyros_forearm_z           1 3.4805e-07 258
- accel_arm_z               1 3.5001e-07 258
- magnet_forearm_x          1 3.5694e-07 258
- magnet_forearm_z          1 3.6192e-07 258
- total_accel_dumbbell      1 3.6268e-07 258
- magnet_arm_y              1 3.7419e-07 258
- accel_arm_y               1 3.8292e-07 258
- pitch_arm                 1 4.1239e-07 258
- num_window                1 6.0791e-07 258
<none>                        3.3377e-07 260

Step:  AIC=258
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    var_roll_belt + avg_pitch_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + var_roll_arm + avg_pitch_arm + stddev_pitch_arm +
    var_pitch_arm + avg_yaw_arm + stddev_yaw_arm + var_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + skewness_roll_arm + skewness_pitch_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + amplitude_roll_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + kurtosis_picth_dumbbell + skewness_roll_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    avg_yaw_dumbbell + stddev_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
```

```
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df   Deviance AIC
- stddev_yaw_dumbbell      1 3.3376e-07 256
- var_roll_belt            1 3.3377e-07 256
- max_yaw_dumbbell         1 3.3378e-07 256
- kurtosis_picth_dumbbell  1 3.3378e-07 256
- max_picth_belt           1 3.3378e-07 256
- min_roll_belt            1 3.3378e-07 256
- max_roll_belt            1 3.3378e-07 256
- var_yaw_arm              1 3.3379e-07 256
- amplitude_roll_arm       1 3.3379e-07 256
- amplitude_roll_belt      1 3.3379e-07 256
- min_roll_arm             1 3.3379e-07 256
- max_roll_arm             1 3.3379e-07 256
- magnet_dumbbell_y        1 3.3380e-07 256
- var_roll_arm             1 3.3381e-07 256
- var_roll_forearm         1 3.3381e-07 256
- stddev_roll_forearm      1 3.3381e-07 256
- kurtosis_roll_forearm    1 3.3381e-07 256
- var_pitch_arm            1 3.3382e-07 256
- max_yaw_forearm          1 3.3382e-07 256
- gyros_dumbbell_y         1 3.3384e-07 256
- skewness_roll_forearm    1 3.3384e-07 256
- skewness_roll_arm        1 3.3384e-07 256
- stddev_yaw_arm           1 3.3384e-07 256
- avg_pitch_forearm        1 3.3384e-07 256
- kurtosis_picth_forearm   1 3.3384e-07 256
- stddev_roll_belt         1 3.3384e-07 256
- skewness_roll_dumbbell   1 3.3386e-07 256
- avg_yaw_dumbbell         1 3.3386e-07 256
- var_yaw_belt             1 3.3387e-07 256
- kurtosis_picth_belt      1 3.3387e-07 256
- avg_pitch_arm            1 3.3388e-07 256
- stddev_roll_arm          1 3.3388e-07 256
- skewness_pitch_forearm   1 3.3389e-07 256
- skewness_pitch_dumbbell  1 3.3389e-07 256
- var_total_accel_belt     1 3.3390e-07 256
- var_accel_forearm        1 3.3390e-07 256
- skewness_roll_belt.1     1 3.3390e-07 256
- amplitude_yaw_forearm    1 3.3391e-07 256
- magnet_dumbbell_z        1 3.3391e-07 256
- stddev_yaw_belt          1 3.3391e-07 256
- min_roll_dumbbell        1 3.3391e-07 256
- min_pitch_belt           1 3.3392e-07 256
- amplitude_roll_dumbbell  1 3.3393e-07 256
- avg_pitch_dumbbell       1 3.3393e-07 256
- gyros_belt_x             1 3.3394e-07 256
- max_roll_dumbbell        1 3.3394e-07 256
- var_accel_dumbbell       1 3.3395e-07 256
- avg_pitch_belt           1 3.3397e-07 256
- var_pitch_forearm        1 3.3400e-07 256
- skewness_pitch_arm       1 3.3400e-07 256
- avg_yaw_forearm          1 3.3400e-07 256
- var_roll_dumbbell        1 3.3401e-07 256
- stddev_pitch_belt        1 3.3401e-07 256
```

- avg_yaw_arm 1 3.3402e-07 256
- max_yaw_arm 1 3.3405e-07 256
- avg_roll_forearm 1 3.3406e-07 256
- stddev_pitch_forearm 1 3.3407e-07 256
- var_pitch_belt 1 3.3407e-07 256
- skewness_roll_belt 1 3.3408e-07 256
- max_picth_arm 1 3.3409e-07 256
- amplitude_pitch_dumbbell 1 3.3409e-07 256
- new_window 1 3.3409e-07 256
- max_yaw_belt 1 3.3410e-07 256
- kurtosis_roll_belt 1 3.3411e-07 256
- var_yaw_forearm 1 3.3411e-07 256
- max_roll_forearm 1 3.3412e-07 256
- min_roll_forearm 1 3.3413e-07 256
- amplitude_roll_forearm 1 3.3413e-07 256
- min_pitch_dumbbell 1 3.3415e-07 256
- yaw_arm 1 3.3415e-07 256
- stddev_yaw_forearm 1 3.3415e-07 256
- max_picth_dumbbell 1 3.3417e-07 256
- min_pitch_forearm 1 3.3420e-07 256
- min_yaw_arm 1 3.3421e-07 256
- accel_belt_z 1 3.3423e-07 256
- avg_roll_arm 1 3.3425e-07 256
- kurtosis_roll_arm 1 3.3425e-07 256
- var_accel_arm 1 3.3428e-07 256
- gyros_dumbbell_x 1 3.3472e-07 256
- accel_belt_x 1 3.3509e-07 256
- total_accel_arm 1 3.3523e-07 256
- gyros_dumbbell_z 1 3.3529e-07 256
- magnet_dumbbell_x 1 3.3540e-07 256
- gyros_belt_z 1 3.3560e-07 256
- magnet_belt_y 1 3.3570e-07 256
- gyros_arm_x 1 3.3582e-07 256
- magnet_forearm_y 1 3.3586e-07 256
- gyros_forearm_x 1 3.3588e-07 256
- yaw_forearm 1 3.3596e-07 256
- roll_belt 1 3.3601e-07 256
- yaw_dumbbell 1 3.3603e-07 256
- gyros_arm_y 1 3.3610e-07 256
- roll_arm 1 3.3611e-07 256
- magnet_arm_z 1 3.3635e-07 256
- accel_dumbbell_z 1 3.3658e-07 256
- accel_dumbbell_y 1 3.3696e-07 256
- magnet_arm_x 1 3.3708e-07 256
- total_accel_forearm 1 3.3730e-07 256
- gyros_arm_z 1 3.3817e-07 256
- user_name 1 3.3821e-07 256
- total_accel_belt 1 3.3869e-07 256
- magnet_belt_x 1 3.3893e-07 256
- pitch_belt 1 3.3915e-07 256
- cvtd_timestamp 1 3.3925e-07 256
- accel_belt_y 1 3.3943e-07 256
- total_accel_dumbbell 1 3.4020e-07 256
- gyros_belt_y 1 3.4197e-07 256
- roll_dumbbell 1 3.4205e-07 256
- accel_forearm_x 1 3.4217e-07 256
- raw_timestamp_part_1 1 3.4239e-07 256

```
- raw_timestamp_part_2      1 3.4243e-07 256
- accel_forearm_y           1 3.4262e-07 256
- magnet_belt_z             1 3.4267e-07 256
- gyros_forearm_y           1 3.4308e-07 256
- pitch_dumbbell            1 3.4380e-07 256
- accel_forearm_z           1 3.4397e-07 256
- accel_dumbbell_x          1 3.4423e-07 256
- accel_arm_x               1 3.4439e-07 256
- gyros_forearm_z           1 3.4805e-07 256
- pitch_forearm             1 3.4954e-07 256
- accel_arm_z               1 3.4995e-07 256
- magnet_forearm_x          1 3.5694e-07 256
- magnet_forearm_z          1 3.6193e-07 256
- accel_arm_y               1 3.9011e-07 256
- magnet_arm_y              1 3.9308e-07 256
- pitch_arm                 1 4.1239e-07 256
- num_window                1 6.0799e-07 256
- stddev_pitch_arm          1 1.2338e-06 256
<none>                        3.3376e-07 258

Step:  AIC=256
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    var_roll_belt + avg_pitch_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + var_roll_arm + avg_pitch_arm + stddev_pitch_arm +
    var_pitch_arm + avg_yaw_arm + stddev_yaw_arm + var_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + skewness_roll_arm + skewness_pitch_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + amplitude_roll_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + kurtosis_picth_dumbbell + skewness_roll_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    max_yaw_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    avg_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_yaw_forearm + min_roll_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
```

```
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                            Df   Deviance AIC
- var_roll_belt              1 3.3377e-07 254
- kurtosis_picth_dumbbell    1 3.3378e-07 254
- max_yaw_dumbbell           1 3.3378e-07 254
- min_roll_belt              1 3.3378e-07 254
- max_roll_belt              1 3.3378e-07 254
- var_yaw_arm                1 3.3379e-07 254
- max_picth_belt             1 3.3379e-07 254
- amplitude_roll_belt        1 3.3380e-07 254
- magnet_dumbbell_y          1 3.3380e-07 254
- amplitude_roll_arm         1 3.3380e-07 254
- var_roll_forearm           1 3.3380e-07 254
- min_roll_arm               1 3.3380e-07 254
- stddev_roll_forearm        1 3.3380e-07 254
- max_roll_arm               1 3.3380e-07 254
- var_roll_arm               1 3.3382e-07 254
- var_pitch_arm              1 3.3383e-07 254
- gyros_dumbbell_y           1 3.3383e-07 254
- skewness_roll_arm          1 3.3384e-07 254
- stddev_yaw_arm             1 3.3385e-07 254
- avg_pitch_forearm          1 3.3385e-07 254
- skewness_roll_forearm      1 3.3385e-07 254
- kurtosis_picth_forearm     1 3.3386e-07 254
- stddev_roll_belt           1 3.3386e-07 254
- skewness_pitch_forearm     1 3.3386e-07 254
- var_yaw_belt               1 3.3387e-07 254
- avg_roll_arm               1 3.3388e-07 254
- skewness_roll_belt.1       1 3.3388e-07 254
- avg_pitch_arm              1 3.3388e-07 254
- kurtosis_roll_forearm      1 3.3389e-07 254
- stddev_roll_arm            1 3.3389e-07 254
- skewness_roll_dumbbell     1 3.3389e-07 254
- skewness_pitch_dumbbell    1 3.3389e-07 254
- var_accel_forearm          1 3.3390e-07 254
- magnet_dumbbell_z          1 3.3390e-07 254
- max_yaw_forearm            1 3.3391e-07 254
- kurtosis_picth_belt        1 3.3392e-07 254
- amplitude_yaw_forearm      1 3.3392e-07 254
- min_pitch_dumbbell         1 3.3393e-07 254
- amplitude_pitch_dumbbell   1 3.3393e-07 254
- max_picth_dumbbell         1 3.3393e-07 254
- avg_yaw_dumbbell           1 3.3393e-07 254
- gyros_belt_x               1 3.3393e-07 254
- var_total_accel_belt       1 3.3393e-07 254
- min_roll_dumbbell          1 3.3394e-07 254
- amplitude_roll_dumbbell    1 3.3394e-07 254
- max_roll_dumbbell          1 3.3394e-07 254
- var_accel_dumbbell         1 3.3396e-07 254
- stddev_pitch_arm           1 3.3397e-07 254
- min_pitch_belt             1 3.3397e-07 254
- avg_pitch_dumbbell         1 3.3399e-07 254
- stddev_yaw_belt            1 3.3400e-07 254
- avg_pitch_belt             1 3.3402e-07 254
```

- var_roll_dumbbell 1 3.3402e-07 254
- var_pitch_forearm 1 3.3402e-07 254
- skewness_pitch_arm 1 3.3405e-07 254
- max_yaw_arm 1 3.3405e-07 254
- avg_yaw_forearm 1 3.3407e-07 254
- stddev_pitch_forearm 1 3.3412e-07 254
- max_roll_forearm 1 3.3413e-07 254
- min_roll_forearm 1 3.3413e-07 254
- amplitude_roll_forearm 1 3.3413e-07 254
- avg_yaw_arm 1 3.3414e-07 254
- max_yaw_belt 1 3.3414e-07 254
- avg_roll_forearm 1 3.3414e-07 254
- min_pitch_forearm 1 3.3414e-07 254
- kurtosis_roll_belt 1 3.3414e-07 254
- yaw_arm 1 3.3414e-07 254
- var_pitch_belt 1 3.3414e-07 254
- var_yaw_forearm 1 3.3416e-07 254
- stddev_yaw_forearm 1 3.3417e-07 254
- max_picth_arm 1 3.3418e-07 254
- skewness_roll_belt 1 3.3422e-07 254
- accel_belt_z 1 3.3423e-07 254
- min_yaw_arm 1 3.3423e-07 254
- new_window 1 3.3425e-07 254
- kurtosis_roll_arm 1 3.3427e-07 254
- var_accel_arm 1 3.3433e-07 254
- stddev_pitch_belt 1 3.3443e-07 254
- gyros_dumbbell_x 1 3.3472e-07 254
- accel_belt_x 1 3.3509e-07 254
- total_accel_arm 1 3.3524e-07 254
- gyros_dumbbell_z 1 3.3532e-07 254
- magnet_dumbbell_x 1 3.3545e-07 254
- gyros_belt_z 1 3.3560e-07 254
- magnet_belt_y 1 3.3570e-07 254
- gyros_arm_x 1 3.3581e-07 254
- magnet_forearm_y 1 3.3585e-07 254
- gyros_forearm_x 1 3.3587e-07 254
- yaw_forearm 1 3.3596e-07 254
- yaw_dumbbell 1 3.3603e-07 254
- roll_arm 1 3.3608e-07 254
- gyros_arm_y 1 3.3610e-07 254
- magnet_arm_z 1 3.3636e-07 254
- accel_dumbbell_z 1 3.3658e-07 254
- accel_dumbbell_y 1 3.3695e-07 254
- magnet_arm_x 1 3.3707e-07 254
- user_name 1 3.3767e-07 254
- roll_belt 1 3.3777e-07 254
- gyros_arm_z 1 3.3820e-07 254
- total_accel_belt 1 3.3867e-07 254
- magnet_belt_x 1 3.3896e-07 254
- pitch_belt 1 3.3916e-07 254
- cvtd_timestamp 1 3.3924e-07 254
- accel_belt_y 1 3.3944e-07 254
- total_accel_dumbbell 1 3.4024e-07 254
- gyros_belt_y 1 3.4195e-07 254
- roll_dumbbell 1 3.4205e-07 254
- accel_forearm_x 1 3.4219e-07 254
- accel_dumbbell_x 1 3.4226e-07 254

```
- raw_timestamp_part_1      1 3.4241e-07 254
- accel_forearm_y           1 3.4260e-07 254
- magnet_belt_z             1 3.4264e-07 254
- pitch_dumbbell            1 3.4309e-07 254
- gyros_forearm_y           1 3.4310e-07 254
- pitch_forearm             1 3.4348e-07 254
- raw_timestamp_part_2      1 3.4379e-07 254
- accel_forearm_z           1 3.4398e-07 254
- accel_arm_x               1 3.4427e-07 254
- gyros_forearm_z           1 3.4805e-07 254
- accel_arm_z               1 3.4996e-07 254
- magnet_forearm_x          1 3.5692e-07 254
- magnet_forearm_z          1 3.6194e-07 254
- total_accel_forearm       1 3.7087e-07 254
- accel_arm_y               1 3.8294e-07 254
- magnet_arm_y              1 3.9430e-07 254
- pitch_arm                 1 4.1238e-07 254
- num_window                1 6.0798e-07 254
<none>                        3.3376e-07 256

Step:  AIC=254
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    skewness_roll_arm + skewness_pitch_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + amplitude_roll_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_picth_dumbbell +
    skewness_roll_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + max_yaw_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_accel_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + avg_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z
```

```
                       Df   Deviance AIC
- max_yaw_dumbbell          1 3.3378e-07 252
- min_roll_belt             1 3.3379e-07 252
- max_roll_belt             1 3.3379e-07 252
- kurtosis_picth_dumbbell   1 3.3379e-07 252
- var_yaw_arm               1 3.3379e-07 252
- amplitude_roll_belt       1 3.3380e-07 252
- magnet_dumbbell_y         1 3.3380e-07 252
- var_roll_forearm          1 3.3380e-07 252
- stddev_roll_forearm       1 3.3380e-07 252
- amplitude_roll_arm        1 3.3381e-07 252
- min_roll_arm              1 3.3381e-07 252
- max_roll_arm              1 3.3381e-07 252
- var_roll_arm              1 3.3382e-07 252
- gyros_dumbbell_y          1 3.3384e-07 252
- var_pitch_arm             1 3.3384e-07 252
- skewness_roll_forearm     1 3.3384e-07 252
- avg_pitch_forearm         1 3.3385e-07 252
- skewness_roll_arm         1 3.3385e-07 252
- max_picth_belt            1 3.3386e-07 252
- stddev_yaw_arm            1 3.3386e-07 252
- var_yaw_belt              1 3.3387e-07 252
- skewness_roll_belt.1      1 3.3387e-07 252
- avg_roll_arm              1 3.3387e-07 252
- kurtosis_roll_forearm     1 3.3388e-07 252
- kurtosis_picth_forearm    1 3.3388e-07 252
- stddev_roll_arm           1 3.3389e-07 252
- var_accel_forearm         1 3.3390e-07 252
- skewness_roll_dumbbell    1 3.3390e-07 252
- skewness_pitch_dumbbell   1 3.3390e-07 252
- avg_pitch_arm             1 3.3390e-07 252
- max_yaw_forearm           1 3.3391e-07 252
- magnet_dumbbell_z         1 3.3391e-07 252
- skewness_pitch_forearm    1 3.3391e-07 252
- amplitude_pitch_dumbbell  1 3.3392e-07 252
- min_pitch_dumbbell        1 3.3392e-07 252
- max_picth_dumbbell        1 3.3392e-07 252
- amplitude_yaw_forearm     1 3.3393e-07 252
- avg_yaw_dumbbell          1 3.3393e-07 252
- min_pitch_belt            1 3.3394e-07 252
- gyros_belt_x              1 3.3394e-07 252
- min_roll_dumbbell         1 3.3395e-07 252
- amplitude_roll_dumbbell   1 3.3395e-07 252
- max_roll_dumbbell         1 3.3395e-07 252
- var_accel_dumbbell        1 3.3397e-07 252
- stddev_yaw_belt           1 3.3397e-07 252
- avg_pitch_dumbbell        1 3.3397e-07 252
- var_total_accel_belt      1 3.3398e-07 252
- avg_pitch_belt            1 3.3403e-07 252
- var_roll_dumbbell         1 3.3403e-07 252
- skewness_pitch_arm        1 3.3405e-07 252
- max_yaw_arm               1 3.3405e-07 252
- stddev_roll_belt          1 3.3407e-07 252
- avg_yaw_forearm           1 3.3407e-07 252
```

- kurtosis_picth_belt 1 3.3408e-07 252
- stddev_pitch_arm 1 3.3410e-07 252
- var_pitch_forearm 1 3.3411e-07 252
- max_roll_forearm 1 3.3412e-07 252
- min_roll_forearm 1 3.3412e-07 252
- amplitude_roll_forearm 1 3.3413e-07 252
- yaw_arm 1 3.3415e-07 252
- avg_roll_forearm 1 3.3415e-07 252
- avg_yaw_arm 1 3.3417e-07 252
- stddev_pitch_forearm 1 3.3418e-07 252
- var_yaw_forearm 1 3.3419e-07 252
- max_picth_arm 1 3.3420e-07 252
- stddev_pitch_belt 1 3.3423e-07 252
- accel_belt_z 1 3.3424e-07 252
- stddev_yaw_forearm 1 3.3425e-07 252
- min_yaw_arm 1 3.3425e-07 252
- new_window 1 3.3426e-07 252
- min_pitch_forearm 1 3.3429e-07 252
- var_pitch_belt 1 3.3430e-07 252
- var_accel_arm 1 3.3447e-07 252
- kurtosis_roll_belt 1 3.3454e-07 252
- max_yaw_belt 1 3.3455e-07 252
- gyros_dumbbell_x 1 3.3472e-07 252
- accel_belt_x 1 3.3509e-07 252
- kurtosis_roll_arm 1 3.3520e-07 252
- total_accel_arm 1 3.3524e-07 252
- gyros_dumbbell_z 1 3.3531e-07 252
- magnet_dumbbell_x 1 3.3544e-07 252
- gyros_belt_z 1 3.3560e-07 252
- magnet_belt_y 1 3.3572e-07 252
- gyros_arm_x 1 3.3580e-07 252
- magnet_forearm_y 1 3.3585e-07 252
- gyros_forearm_x 1 3.3588e-07 252
- yaw_forearm 1 3.3597e-07 252
- yaw_dumbbell 1 3.3603e-07 252
- roll_arm 1 3.3607e-07 252
- gyros_arm_y 1 3.3610e-07 252
- magnet_arm_z 1 3.3636e-07 252
- accel_dumbbell_z 1 3.3662e-07 252
- roll_belt 1 3.3672e-07 252
- accel_dumbbell_y 1 3.3696e-07 252
- magnet_arm_x 1 3.3710e-07 252
- total_accel_forearm 1 3.3732e-07 252
- user_name 1 3.3798e-07 252
- gyros_arm_z 1 3.3820e-07 252
- total_accel_belt 1 3.3868e-07 252
- magnet_belt_x 1 3.3906e-07 252
- pitch_belt 1 3.3919e-07 252
- cvtd_timestamp 1 3.3927e-07 252
- accel_belt_y 1 3.3944e-07 252
- gyros_belt_y 1 3.4196e-07 252
- roll_dumbbell 1 3.4208e-07 252
- accel_forearm_x 1 3.4217e-07 252
- accel_dumbbell_x 1 3.4224e-07 252
- raw_timestamp_part_1 1 3.4241e-07 252
- magnet_belt_z 1 3.4257e-07 252
- accel_forearm_y 1 3.4260e-07 252

```
- raw_timestamp_part_2      1 3.4300e-07 252
- gyros_forearm_y           1 3.4307e-07 252
- pitch_dumbbell            1 3.4310e-07 252
- pitch_forearm             1 3.4350e-07 252
- accel_forearm_z           1 3.4398e-07 252
- accel_arm_x               1 3.4432e-07 252
- gyros_forearm_z           1 3.4805e-07 252
- total_accel_dumbbell      1 3.4933e-07 252
- accel_arm_z               1 3.4996e-07 252
- magnet_forearm_x          1 3.5693e-07 252
- magnet_forearm_z          1 3.6194e-07 252
- magnet_arm_y              1 3.7499e-07 252
- accel_arm_y               1 3.8297e-07 252
- pitch_arm                 1 4.1238e-07 252
- num_window                1 6.0806e-07 252
- skewness_roll_belt        1 1.9739e-06 252
<none>                        3.3377e-07 254

Step:  AIC=252
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    skewness_roll_arm + skewness_pitch_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + amplitude_roll_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + kurtosis_picth_dumbbell +
    skewness_roll_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    avg_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_yaw_forearm + min_roll_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z
```

	Df	Deviance	AIC
- amplitude_roll_arm	1	3.3380e-07	248
- min_roll_arm	1	3.3380e-07	248
- max_roll_arm	1	3.3380e-07	248
- stddev_roll_forearm	1	3.3381e-07	248
- var_roll_forearm	1	3.3381e-07	248
- var_yaw_arm	1	3.3381e-07	248
- max_picth_belt	1	3.3381e-07	248
- magnet_dumbbell_y	1	3.3382e-07	248
- min_roll_belt	1	3.3382e-07	248
- var_roll_arm	1	3.3382e-07	248
- max_roll_belt	1	3.3382e-07	248
- amplitude_roll_belt	1	3.3384e-07	248
- var_pitch_arm	1	3.3384e-07	248
- gyros_dumbbell_y	1	3.3385e-07	248
- skewness_roll_belt.1	1	3.3386e-07	248
- skewness_roll_arm	1	3.3386e-07	248
- skewness_roll_forearm	1	3.3387e-07	248
- avg_roll_arm	1	3.3387e-07	248
- kurtosis_roll_forearm	1	3.3387e-07	248
- avg_pitch_forearm	1	3.3387e-07	248
- stddev_yaw_arm	1	3.3388e-07	248
- kurtosis_picth_forearm	1	3.3389e-07	248
- var_yaw_belt	1	3.3389e-07	248
- max_yaw_forearm	1	3.3390e-07	248
- stddev_roll_arm	1	3.3390e-07	248
- var_accel_forearm	1	3.3391e-07	248
- skewness_roll_dumbbell	1	3.3392e-07	248
- min_pitch_dumbbell	1	3.3392e-07	248
- amplitude_pitch_dumbbell	1	3.3392e-07	248
- max_picth_dumbbell	1	3.3393e-07	248
- min_pitch_belt	1	3.3393e-07	248
- magnet_dumbbell_z	1	3.3393e-07	248
- avg_yaw_dumbbell	1	3.3394e-07	248
- avg_pitch_arm	1	3.3394e-07	248
- min_roll_dumbbell	1	3.3394e-07	248
- amplitude_roll_dumbbell	1	3.3394e-07	248
- max_roll_dumbbell	1	3.3394e-07	248
- skewness_pitch_forearm	1	3.3394e-07	248
- amplitude_yaw_forearm	1	3.3394e-07	248
- var_accel_dumbbell	1	3.3395e-07	248
- gyros_belt_x	1	3.3396e-07	248
- stddev_yaw_belt	1	3.3396e-07	248
- skewness_pitch_dumbbell	1	3.3396e-07	248
- var_total_accel_belt	1	3.3397e-07	248
- avg_pitch_dumbbell	1	3.3400e-07	248
- stddev_pitch_arm	1	3.3401e-07	248
- avg_pitch_belt	1	3.3403e-07	248
- avg_yaw_forearm	1	3.3408e-07	248
- kurtosis_picth_belt	1	3.3408e-07	248
- skewness_pitch_arm	1	3.3409e-07	248
- stddev_roll_belt	1	3.3412e-07	248
- var_roll_dumbbell	1	3.3412e-07	248
- min_pitch_forearm	1	3.3413e-07	248
- var_pitch_forearm	1	3.3414e-07	248

- avg_roll_forearm 1 3.3414e-07 248
- yaw_arm 1 3.3417e-07 248
- avg_yaw_arm 1 3.3417e-07 248
- min_roll_forearm 1 3.3418e-07 248
- max_yaw_arm 1 3.3419e-07 248
- max_roll_forearm 1 3.3420e-07 248
- new_window 1 3.3420e-07 248
- max_yaw_belt 1 3.3421e-07 248
- kurtosis_roll_belt 1 3.3421e-07 248
- var_pitch_belt 1 3.3422e-07 248
- stddev_pitch_belt 1 3.3423e-07 248
- amplitude_roll_forearm 1 3.3423e-07 248
- stddev_pitch_forearm 1 3.3424e-07 248
- max_picth_arm 1 3.3424e-07 248
- var_yaw_forearm 1 3.3425e-07 248
- accel_belt_z 1 3.3426e-07 248
- stddev_yaw_forearm 1 3.3428e-07 248
- skewness_roll_belt 1 3.3432e-07 248
- kurtosis_roll_arm 1 3.3434e-07 248
- min_yaw_arm 1 3.3438e-07 248
- var_accel_arm 1 3.3453e-07 248
- gyros_dumbbell_x 1 3.3474e-07 248
- accel_belt_x 1 3.3512e-07 248
- total_accel_arm 1 3.3525e-07 248
- gyros_dumbbell_z 1 3.3530e-07 248
- magnet_dumbbell_x 1 3.3540e-07 248
- gyros_belt_z 1 3.3561e-07 248
- magnet_belt_y 1 3.3573e-07 248
- roll_belt 1 3.3581e-07 248
- magnet_forearm_y 1 3.3585e-07 248
- gyros_forearm_x 1 3.3588e-07 248
- gyros_arm_x 1 3.3589e-07 248
- yaw_forearm 1 3.3601e-07 248
- yaw_dumbbell 1 3.3602e-07 248
- roll_arm 1 3.3609e-07 248
- gyros_arm_y 1 3.3619e-07 248
- magnet_arm_z 1 3.3642e-07 248
- accel_dumbbell_z 1 3.3663e-07 248
- accel_dumbbell_y 1 3.3698e-07 248
- magnet_arm_x 1 3.3714e-07 248
- total_accel_forearm 1 3.3727e-07 248
- user_name 1 3.3772e-07 248
- gyros_arm_z 1 3.3821e-07 248
- total_accel_belt 1 3.3870e-07 248
- magnet_belt_x 1 3.3896e-07 248
- pitch_belt 1 3.3919e-07 248
- cvtd_timestamp 1 3.3927e-07 248
- accel_belt_y 1 3.3948e-07 248
- total_accel_dumbbell 1 3.4021e-07 248
- gyros_belt_y 1 3.4198e-07 248
- roll_dumbbell 1 3.4208e-07 248
- accel_forearm_x 1 3.4220e-07 248
- accel_dumbbell_x 1 3.4223e-07 248
- raw_timestamp_part_2 1 3.4232e-07 248
- raw_timestamp_part_1 1 3.4246e-07 248
- magnet_belt_z 1 3.4258e-07 248
- accel_forearm_y 1 3.4265e-07 248

```
- gyros_forearm_y           1 3.4308e-07 248
- pitch_dumbbell            1 3.4311e-07 248
- pitch_forearm             1 3.4351e-07 248
- accel_forearm_z           1 3.4399e-07 248
- accel_arm_x               1 3.4435e-07 248
- gyros_forearm_z           1 3.4805e-07 248
- accel_arm_z               1 3.5002e-07 248
- magnet_forearm_x          1 3.5695e-07 248
- magnet_forearm_z          1 3.6193e-07 248
- magnet_arm_y              1 3.7427e-07 248
- accel_arm_y               1 3.8296e-07 248
- pitch_arm                 1 4.1250e-07 248
- num_window                1 6.0839e-07 248
<none>                        3.3379e-07 250

Step:  AIC=248
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + var_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    skewness_roll_arm + skewness_pitch_arm + max_roll_arm + max_picth_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + skewness_roll_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    min_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_accel_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + avg_yaw_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_y + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_y + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_roll_forearm + kurtosis_picth_fore
arm +
    skewness_roll_forearm + skewness_pitch_forearm + max_roll_forearm +
    max_yaw_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z



                          Df   Deviance AIC
```

- var_yaw_arm 1 3.3380e-07 246
- max_picth_belt 1 3.3381e-07 246
- var_roll_forearm 1 3.3381e-07 246
- stddev_roll_forearm 1 3.3381e-07 246
- min_roll_belt 1 3.3381e-07 246
- max_roll_belt 1 3.3381e-07 246
- var_roll_arm 1 3.3382e-07 246
- amplitude_roll_belt 1 3.3383e-07 246
- var_pitch_arm 1 3.3384e-07 246
- magnet_dumbbell_y 1 3.3385e-07 246
- skewness_roll_arm 1 3.3386e-07 246
- avg_roll_arm 1 3.3386e-07 246
- skewness_roll_forearm 1 3.3387e-07 246
- kurtosis_roll_forearm 1 3.3387e-07 246
- avg_pitch_forearm 1 3.3388e-07 246
- gyros_dumbbell_y 1 3.3388e-07 246
- stddev_yaw_arm 1 3.3388e-07 246
- skewness_roll_belt.1 1 3.3389e-07 246
- var_yaw_belt 1 3.3389e-07 246
- var_accel_forearm 1 3.3389e-07 246
- stddev_roll_arm 1 3.3390e-07 246
- max_yaw_forearm 1 3.3391e-07 246
- kurtosis_picth_forearm 1 3.3391e-07 246
- min_pitch_belt 1 3.3392e-07 246
- amplitude_pitch_dumbbell 1 3.3392e-07 246
- min_pitch_dumbbell 1 3.3392e-07 246
- max_picth_dumbbell 1 3.3392e-07 246
- avg_yaw_dumbbell 1 3.3393e-07 246
- min_roll_dumbbell 1 3.3393e-07 246
- amplitude_roll_dumbbell 1 3.3393e-07 246
- max_roll_dumbbell 1 3.3393e-07 246
- skewness_roll_dumbbell 1 3.3393e-07 246
- amplitude_yaw_forearm 1 3.3393e-07 246
- magnet_dumbbell_z 1 3.3393e-07 246
- avg_pitch_arm 1 3.3394e-07 246
- var_accel_dumbbell 1 3.3394e-07 246
- stddev_yaw_belt 1 3.3395e-07 246
- gyros_belt_x 1 3.3397e-07 246
- skewness_pitch_forearm 1 3.3397e-07 246
- skewness_pitch_dumbbell 1 3.3397e-07 246
- var_total_accel_belt 1 3.3399e-07 246
- min_roll_arm 1 3.3400e-07 246
- avg_pitch_dumbbell 1 3.3402e-07 246
- stddev_pitch_arm 1 3.3402e-07 246
- avg_pitch_belt 1 3.3402e-07 246
- skewness_pitch_arm 1 3.3409e-07 246
- kurtosis_picth_belt 1 3.3411e-07 246
- stddev_roll_belt 1 3.3411e-07 246
- var_roll_dumbbell 1 3.3412e-07 246
- avg_yaw_forearm 1 3.3415e-07 246
- max_roll_forearm 1 3.3415e-07 246
- min_roll_forearm 1 3.3416e-07 246
- amplitude_roll_forearm 1 3.3416e-07 246
- min_pitch_forearm 1 3.3418e-07 246
- yaw_arm 1 3.3418e-07 246
- max_yaw_arm 1 3.3419e-07 246
- max_roll_arm 1 3.3419e-07 246

- stddev_pitch_belt 1 3.3420e-07 246
- avg_yaw_arm 1 3.3421e-07 246
- max_yaw_belt 1 3.3422e-07 246
- avg_roll_forearm 1 3.3422e-07 246
- kurtosis_roll_belt 1 3.3422e-07 246
- accel_belt_z 1 3.3426e-07 246
- max_picth_arm 1 3.3427e-07 246
- var_pitch_forearm 1 3.3427e-07 246
- new_window 1 3.3428e-07 246
- var_pitch_belt 1 3.3430e-07 246
- var_yaw_forearm 1 3.3433e-07 246
- kurtosis_roll_arm 1 3.3439e-07 246
- stddev_yaw_forearm 1 3.3440e-07 246
- min_yaw_arm 1 3.3441e-07 246
- stddev_pitch_forearm 1 3.3442e-07 246
- skewness_roll_belt 1 3.3442e-07 246
- var_accel_arm 1 3.3457e-07 246
- gyros_dumbbell_x 1 3.3474e-07 246
- accel_belt_x 1 3.3514e-07 246
- total_accel_arm 1 3.3525e-07 246
- gyros_dumbbell_z 1 3.3535e-07 246
- magnet_dumbbell_x 1 3.3548e-07 246
- gyros_belt_z 1 3.3563e-07 246
- magnet_belt_y 1 3.3574e-07 246
- roll_belt 1 3.3587e-07 246
- gyros_arm_x 1 3.3587e-07 246
- magnet_forearm_y 1 3.3589e-07 246
- gyros_forearm_x 1 3.3593e-07 246
- yaw_forearm 1 3.3601e-07 246
- yaw_dumbbell 1 3.3602e-07 246
- roll_arm 1 3.3611e-07 246
- gyros_arm_y 1 3.3618e-07 246
- magnet_arm_z 1 3.3642e-07 246
- accel_dumbbell_z 1 3.3663e-07 246
- accel_dumbbell_y 1 3.3697e-07 246
- magnet_arm_x 1 3.3715e-07 246
- total_accel_forearm 1 3.3731e-07 246
- user_name 1 3.3773e-07 246
- gyros_arm_z 1 3.3823e-07 246
- total_accel_belt 1 3.3871e-07 246
- magnet_belt_x 1 3.3897e-07 246
- pitch_belt 1 3.3920e-07 246
- cvtd_timestamp 1 3.3926e-07 246
- accel_belt_y 1 3.3947e-07 246
- total_accel_dumbbell 1 3.4023e-07 246
- gyros_belt_y 1 3.4199e-07 246
- roll_dumbbell 1 3.4208e-07 246
- accel_forearm_x 1 3.4221e-07 246
- accel_dumbbell_x 1 3.4222e-07 246
- raw_timestamp_part_2 1 3.4235e-07 246
- raw_timestamp_part_1 1 3.4245e-07 246
- magnet_belt_z 1 3.4262e-07 246
- accel_forearm_y 1 3.4267e-07 246
- gyros_forearm_y 1 3.4308e-07 246
- pitch_dumbbell 1 3.4308e-07 246
- pitch_forearm 1 3.4350e-07 246
- accel_forearm_z 1 3.4399e-07 246

```
- accel_arm_x               1 3.4436e-07 246
- gyros_forearm_z           1 3.4808e-07 246
- accel_arm_z               1 3.5002e-07 246
- magnet_forearm_x          1 3.5696e-07 246
- magnet_forearm_z          1 3.6196e-07 246
- magnet_arm_y              1 3.7426e-07 246
- accel_arm_y               1 3.8298e-07 246
- pitch_arm                 1 4.1251e-07 246
- num_window                1 6.0839e-07 246
<none>                        3.3380e-07 248

Step:  AIC=246
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_picth_belt + max_yaw_belt + min_roll_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    var_roll_arm + avg_pitch_arm + stddev_pitch_arm + var_pitch_arm +
    avg_yaw_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + skewness_roll_arm +
    skewness_pitch_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_accel_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + avg_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z



                          Df   Deviance AIC
- max_picth_belt           1 3.3383e-07 244
- var_roll_forearm         1 3.3383e-07 244
- min_roll_belt            1 3.3384e-07 244
- max_roll_belt            1 3.3384e-07 244
- stddev_roll_forearm      1 3.3385e-07 244
```

- var_pitch_arm 1 3.3385e-07 244
- var_roll_arm 1 3.3386e-07 244
- magnet_dumbbell_y 1 3.3386e-07 244
- skewness_roll_arm 1 3.3386e-07 244
- skewness_roll_forearm 1 3.3387e-07 244
- kurtosis_roll_forearm 1 3.3387e-07 244
- amplitude_roll_belt 1 3.3387e-07 244
- avg_pitch_forearm 1 3.3388e-07 244
- gyros_dumbbell_y 1 3.3388e-07 244
- var_yaw_belt 1 3.3389e-07 244
- skewness_roll_belt.1 1 3.3390e-07 244
- kurtosis_picth_forearm 1 3.3390e-07 244
- avg_roll_arm 1 3.3391e-07 244
- min_roll_dumbbell 1 3.3392e-07 244
- amplitude_roll_dumbbell 1 3.3392e-07 244
- max_roll_dumbbell 1 3.3392e-07 244
- skewness_roll_dumbbell 1 3.3392e-07 244
- max_yaw_forearm 1 3.3392e-07 244
- amplitude_pitch_dumbbell 1 3.3392e-07 244
- min_pitch_dumbbell 1 3.3392e-07 244
- max_picth_dumbbell 1 3.3392e-07 244
- min_pitch_belt 1 3.3393e-07 244
- var_accel_forearm 1 3.3394e-07 244
- magnet_dumbbell_z 1 3.3394e-07 244
- avg_pitch_arm 1 3.3395e-07 244
- stddev_yaw_belt 1 3.3396e-07 244
- var_accel_dumbbell 1 3.3396e-07 244
- avg_yaw_dumbbell 1 3.3397e-07 244
- gyros_belt_x 1 3.3397e-07 244
- amplitude_yaw_forearm 1 3.3397e-07 244
- skewness_pitch_forearm 1 3.3398e-07 244
- stddev_roll_arm 1 3.3398e-07 244
- var_total_accel_belt 1 3.3399e-07 244
- skewness_pitch_dumbbell 1 3.3400e-07 244
- avg_pitch_dumbbell 1 3.3402e-07 244
- avg_pitch_belt 1 3.3402e-07 244
- stddev_pitch_arm 1 3.3405e-07 244
- kurtosis_picth_belt 1 3.3406e-07 244
- stddev_yaw_arm 1 3.3408e-07 244
- skewness_pitch_arm 1 3.3410e-07 244
- stddev_roll_belt 1 3.3412e-07 244
- var_roll_dumbbell 1 3.3414e-07 244
- avg_yaw_forearm 1 3.3416e-07 244
- max_roll_forearm 1 3.3416e-07 244
- min_roll_forearm 1 3.3416e-07 244
- amplitude_roll_forearm 1 3.3417e-07 244
- stddev_pitch_belt 1 3.3417e-07 244
- yaw_arm 1 3.3418e-07 244
- min_roll_arm 1 3.3419e-07 244
- max_roll_arm 1 3.3419e-07 244
- avg_yaw_arm 1 3.3422e-07 244
- avg_roll_forearm 1 3.3422e-07 244
- max_yaw_belt 1 3.3423e-07 244
- kurtosis_roll_belt 1 3.3424e-07 244
- min_pitch_forearm 1 3.3424e-07 244
- new_window 1 3.3425e-07 244
- var_pitch_forearm 1 3.3426e-07 244

- accel_belt_z 1 3.3427e-07 244
- max_picth_arm 1 3.3427e-07 244
- var_pitch_belt 1 3.3431e-07 244
- max_yaw_arm 1 3.3433e-07 244
- kurtosis_roll_arm 1 3.3440e-07 244
- skewness_roll_belt 1 3.3443e-07 244
- var_accel_arm 1 3.3453e-07 244
- stddev_pitch_forearm 1 3.3454e-07 244
- var_yaw_forearm 1 3.3462e-07 244
- min_yaw_arm 1 3.3463e-07 244
- stddev_yaw_forearm 1 3.3465e-07 244
- gyros_dumbbell_x 1 3.3476e-07 244
- accel_belt_x 1 3.3516e-07 244
- total_accel_arm 1 3.3527e-07 244
- gyros_dumbbell_z 1 3.3536e-07 244
- magnet_dumbbell_x 1 3.3548e-07 244
- gyros_belt_z 1 3.3563e-07 244
- magnet_belt_y 1 3.3575e-07 244
- roll_belt 1 3.3581e-07 244
- magnet_forearm_y 1 3.3590e-07 244
- gyros_arm_x 1 3.3590e-07 244
- gyros_forearm_x 1 3.3597e-07 244
- yaw_forearm 1 3.3601e-07 244
- yaw_dumbbell 1 3.3602e-07 244
- roll_arm 1 3.3615e-07 244
- gyros_arm_y 1 3.3620e-07 244
- magnet_arm_z 1 3.3647e-07 244
- accel_dumbbell_z 1 3.3664e-07 244
- accel_dumbbell_y 1 3.3697e-07 244
- magnet_arm_x 1 3.3715e-07 244
- total_accel_forearm 1 3.3736e-07 244
- user_name 1 3.3776e-07 244
- gyros_arm_z 1 3.3824e-07 244
- total_accel_belt 1 3.3871e-07 244
- magnet_belt_x 1 3.3914e-07 244
- pitch_belt 1 3.3921e-07 244
- cvtd_timestamp 1 3.3928e-07 244
- accel_belt_y 1 3.3948e-07 244
- total_accel_dumbbell 1 3.4024e-07 244
- gyros_belt_y 1 3.4207e-07 244
- roll_dumbbell 1 3.4209e-07 244
- accel_forearm_x 1 3.4222e-07 244
- accel_dumbbell_x 1 3.4223e-07 244
- raw_timestamp_part_2 1 3.4235e-07 244
- raw_timestamp_part_1 1 3.4250e-07 244
- magnet_belt_z 1 3.4271e-07 244
- accel_forearm_y 1 3.4273e-07 244
- pitch_dumbbell 1 3.4309e-07 244
- gyros_forearm_y 1 3.4310e-07 244
- pitch_forearm 1 3.4360e-07 244
- accel_forearm_z 1 3.4402e-07 244
- accel_arm_x 1 3.4436e-07 244
- gyros_forearm_z 1 3.4808e-07 244
- accel_arm_z 1 3.5017e-07 244
- magnet_forearm_x 1 3.5700e-07 244
- magnet_forearm_z 1 3.6198e-07 244
- magnet_arm_y 1 3.7471e-07 244

```
- accel_arm_y               1 3.8299e-07 244
- pitch_arm                 1 4.1268e-07 244
- num_window                1 6.0849e-07 244
<none>                        3.3380e-07 246

Step:  AIC=244
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_yaw_belt + min_roll_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + var_roll_arm +
    avg_pitch_arm + stddev_pitch_arm + var_pitch_arm + avg_yaw_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + skewness_roll_arm +
    skewness_pitch_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_roll_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_accel_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + avg_yaw_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_y + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_y + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    kurtosis_roll_forearm + kurtosis_picth_forearm + skewness_roll_forearm +
    skewness_pitch_forearm + max_roll_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    amplitude_yaw_forearm + total_accel_forearm + var_accel_forearm +
    avg_roll_forearm + stddev_roll_forearm + var_roll_forearm +
    avg_pitch_forearm + stddev_pitch_forearm + var_pitch_forearm +
    avg_yaw_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z


                         Df   Deviance AIC
- skewness_roll_arm         1 3.3383e-07 242
- var_roll_forearm          1 3.3384e-07 242
- min_roll_belt             1 3.3386e-07 242
- stddev_roll_forearm       1 3.3386e-07 242
- kurtosis_roll_forearm     1 3.3386e-07 242
- max_roll_belt             1 3.3386e-07 242
- skewness_roll_forearm     1 3.3387e-07 242
- amplitude_roll_belt       1 3.3387e-07 242
- avg_roll_arm              1 3.3388e-07 242
- avg_pitch_forearm         1 3.3388e-07 242
- magnet_dumbbell_y         1 3.3388e-07 242
- var_roll_arm              1 3.3389e-07 242
- var_pitch_arm             1 3.3389e-07 242
```

- var_yaw_belt 1 3.3390e-07 242
- skewness_roll_belt.1 1 3.3391e-07 242
- kurtosis_picth_forearm 1 3.3391e-07 242
- max_yaw_forearm 1 3.3391e-07 242
- skewness_roll_dumbbell 1 3.3391e-07 242
- gyros_dumbbell_y 1 3.3392e-07 242
- avg_pitch_arm 1 3.3393e-07 242
- var_accel_forearm 1 3.3393e-07 242
- min_roll_dumbbell 1 3.3393e-07 242
- amplitude_roll_dumbbell 1 3.3394e-07 242
- max_roll_dumbbell 1 3.3394e-07 242
- stddev_yaw_belt 1 3.3394e-07 242
- amplitude_yaw_forearm 1 3.3394e-07 242
- var_accel_dumbbell 1 3.3395e-07 242
- avg_yaw_dumbbell 1 3.3395e-07 242
- amplitude_pitch_dumbbell 1 3.3396e-07 242
- min_pitch_dumbbell 1 3.3396e-07 242
- max_picth_dumbbell 1 3.3396e-07 242
- magnet_dumbbell_z 1 3.3396e-07 242
- skewness_pitch_forearm 1 3.3397e-07 242
- gyros_belt_x 1 3.3399e-07 242
- avg_pitch_dumbbell 1 3.3400e-07 242
- skewness_pitch_dumbbell 1 3.3400e-07 242
- stddev_roll_arm 1 3.3403e-07 242
- stddev_pitch_arm 1 3.3404e-07 242
- avg_pitch_belt 1 3.3404e-07 242
- stddev_yaw_arm 1 3.3406e-07 242
- kurtosis_picth_belt 1 3.3406e-07 242
- skewness_pitch_arm 1 3.3408e-07 242
- max_roll_forearm 1 3.3414e-07 242
- min_roll_forearm 1 3.3414e-07 242
- stddev_roll_belt 1 3.3414e-07 242
- amplitude_roll_forearm 1 3.3415e-07 242
- avg_yaw_forearm 1 3.3415e-07 242
- var_roll_dumbbell 1 3.3416e-07 242
- yaw_arm 1 3.3418e-07 242
- min_pitch_forearm 1 3.3420e-07 242
- avg_yaw_arm 1 3.3421e-07 242
- avg_roll_forearm 1 3.3422e-07 242
- min_pitch_belt 1 3.3423e-07 242
- min_roll_arm 1 3.3423e-07 242
- max_roll_arm 1 3.3425e-07 242
- stddev_pitch_belt 1 3.3425e-07 242
- max_yaw_belt 1 3.3426e-07 242
- max_picth_arm 1 3.3426e-07 242
- kurtosis_roll_belt 1 3.3427e-07 242
- accel_belt_z 1 3.3427e-07 242
- max_yaw_arm 1 3.3428e-07 242
- var_pitch_forearm 1 3.3430e-07 242
- var_pitch_belt 1 3.3440e-07 242
- kurtosis_roll_arm 1 3.3448e-07 242
- skewness_roll_belt 1 3.3449e-07 242
- var_yaw_forearm 1 3.3455e-07 242
- var_accel_arm 1 3.3459e-07 242
- min_yaw_arm 1 3.3463e-07 242
- stddev_pitch_forearm 1 3.3466e-07 242
- stddev_yaw_forearm 1 3.3474e-07 242

```
- gyros_dumbbell_x          1 3.3477e-07 242
- var_total_accel_belt      1 3.3487e-07 242
- accel_belt_x              1 3.3520e-07 242
- total_accel_arm           1 3.3528e-07 242
- gyros_dumbbell_z          1 3.3535e-07 242
- magnet_dumbbell_x         1 3.3547e-07 242
- gyros_belt_z              1 3.3562e-07 242
- magnet_belt_y             1 3.3575e-07 242
- roll_belt                 1 3.3585e-07 242
- magnet_forearm_y          1 3.3592e-07 242
- gyros_arm_x               1 3.3595e-07 242
- gyros_forearm_x           1 3.3595e-07 242
- yaw_forearm               1 3.3602e-07 242
- yaw_dumbbell              1 3.3602e-07 242
- roll_arm                  1 3.3616e-07 242
- gyros_arm_y               1 3.3625e-07 242
- magnet_arm_z              1 3.3648e-07 242
- accel_dumbbell_z          1 3.3662e-07 242
- accel_dumbbell_y          1 3.3697e-07 242
- magnet_arm_x              1 3.3718e-07 242
- total_accel_forearm       1 3.3733e-07 242
- user_name                 1 3.3778e-07 242
- gyros_arm_z               1 3.3824e-07 242
- total_accel_belt          1 3.3875e-07 242
- magnet_belt_x             1 3.3899e-07 242
- cvtd_timestamp            1 3.3928e-07 242
- pitch_belt                1 3.3928e-07 242
- accel_belt_y              1 3.3951e-07 242
- total_accel_dumbbell      1 3.4024e-07 242
- gyros_belt_y              1 3.4208e-07 242
- roll_dumbbell             1 3.4209e-07 242
- accel_dumbbell_x          1 3.4222e-07 242
- accel_forearm_x           1 3.4223e-07 242
- raw_timestamp_part_2      1 3.4232e-07 242
- raw_timestamp_part_1      1 3.4248e-07 242
- magnet_belt_z             1 3.4266e-07 242
- accel_forearm_y           1 3.4270e-07 242
- pitch_dumbbell            1 3.4308e-07 242
- gyros_forearm_y           1 3.4311e-07 242
- pitch_forearm             1 3.4360e-07 242
- accel_forearm_z           1 3.4403e-07 242
- accel_arm_x               1 3.4441e-07 242
- gyros_forearm_z           1 3.4809e-07 242
- accel_arm_z               1 3.5023e-07 242
- magnet_forearm_x          1 3.5703e-07 242
- magnet_forearm_z          1 3.6206e-07 242
- magnet_arm_y              1 3.7435e-07 242
- accel_arm_y               1 3.8299e-07 242
- pitch_arm                 1 4.1270e-07 242
- num_window                1 6.0866e-07 242
- new_window                1 1.4420e-06 242
<none>                        3.3383e-07 244

Step:  AIC=242
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
```

```
    skewness_roll_belt + skewness_roll_belt.1 + max_roll_belt +
    max_yaw_belt + min_roll_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + var_roll_arm +
    avg_pitch_arm + stddev_pitch_arm + var_pitch_arm + avg_yaw_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + skewness_pitch_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_roll_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + min_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    avg_yaw_dumbbell + gyros_dumbbell_x + gyros_dumbbell_y +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_y +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_roll_forearm +
    kurtosis_picth_forearm + skewness_roll_forearm + skewness_pitch_forearm +
    max_roll_forearm + max_yaw_forearm + min_roll_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + amplitude_yaw_forearm + total_accel_forearm +
    var_accel_forearm + avg_roll_forearm + stddev_roll_forearm +
    var_roll_forearm + avg_pitch_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z


- avg_yaw_arm              1 3.3496e-07 204
- max_yaw_arm              1 3.3498e-07 204
- max_picth_arm            1 3.3499e-07 204
- var_pitch_belt           1 3.3500e-07 204
- accel_belt_z             1 3.3516e-07 204
- var_accel_arm            1 3.3521e-07 204
- kurtosis_roll_arm        1 3.3524e-07 204
- min_yaw_arm              1 3.3525e-07 204
- stddev_pitch_forearm     1 3.3525e-07 204
- stddev_yaw_forearm       1 3.3555e-07 204
- var_yaw_forearm          1 3.3557e-07 204
- max_roll_arm             1 3.3575e-07 204
- gyros_dumbbell_z         1 3.3577e-07 204
- magnet_belt_y            1 3.3583e-07 204
- total_accel_arm          1 3.3589e-07 204
- accel_belt_x             1 3.3600e-07 204
- magnet_forearm_y         1 3.3610e-07 204
- gyros_arm_x              1 3.3615e-07 204
- gyros_forearm_x          1 3.3621e-07 204
- roll_arm                 1 3.3650e-07 204
- yaw_forearm              1 3.3658e-07 204
- gyros_belt_z             1 3.3672e-07 204
```

```
- gyros_arm_y               1 3.3689e-07 204
- accel_dumbbell_z          1 3.3690e-07 204
- yaw_dumbbell              1 3.3722e-07 204
- magnet_arm_z              1 3.3741e-07 204
- total_accel_forearm       1 3.3745e-07 204
- magnet_arm_x              1 3.3747e-07 204
- accel_dumbbell_y          1 3.3757e-07 204
- roll_belt                 1 3.3777e-07 204
- magnet_dumbbell_x         1 3.3842e-07 204
- gyros_arm_z               1 3.3953e-07 204
- accel_belt_y              1 3.3989e-07 204
- total_accel_dumbbell      1 3.4023e-07 204
- cvtd_timestamp            1 3.4053e-07 204
- user_name                 1 3.4072e-07 204
- raw_timestamp_part_2      1 3.4193e-07 204
- total_accel_belt          1 3.4210e-07 204
- magnet_belt_x             1 3.4226e-07 204
- roll_dumbbell             1 3.4258e-07 204
- pitch_belt                1 3.4261e-07 204
- accel_dumbbell_x          1 3.4273e-07 204
- accel_forearm_x           1 3.4276e-07 204
- gyros_forearm_y           1 3.4348e-07 204
- accel_forearm_y           1 3.4385e-07 204
- gyros_belt_y              1 3.4398e-07 204
- accel_forearm_z           1 3.4417e-07 204
- pitch_dumbbell            1 3.4476e-07 204
- pitch_forearm             1 3.4482e-07 204
- accel_arm_x               1 3.4484e-07 204
- raw_timestamp_part_1      1 3.4636e-07 204
- magnet_belt_z             1 3.4647e-07 204
- gyros_forearm_z           1 3.4904e-07 204
- accel_arm_z               1 3.5204e-07 204
- magnet_forearm_x          1 3.5843e-07 204
- magnet_forearm_z          1 3.6666e-07 204
- accel_arm_y               1 3.8791e-07 204
- pitch_arm                 1 4.1427e-07 204
- num_window                1 6.2104e-07 204
- magnet_arm_y              1 2.2439e-06 204
<none>                        3.3438e-07 206

Step:  AIC=204
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + max_roll_belt + max_yaw_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    avg_yaw_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_pitch_dumbbell +
```

```
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_accel_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + kurtosis_picth_forearm
+
    skewness_pitch_forearm + max_roll_forearm + max_yaw_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    total_accel_forearm + avg_roll_forearm + stddev_pitch_forearm +
    var_pitch_forearm + avg_yaw_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                           Df   Deviance AIC
- var_accel_dumbbell        1 3.3445e-07 202
- avg_pitch_belt            1 3.3446e-07 202
- min_roll_forearm          1 3.3448e-07 202
- max_roll_forearm          1 3.3448e-07 202
- kurtosis_picth_belt       1 3.3448e-07 202
- amplitude_roll_forearm    1 3.3448e-07 202
- avg_yaw_forearm           1 3.3449e-07 202
- max_yaw_forearm           1 3.3449e-07 202
- kurtosis_picth_forearm    1 3.3450e-07 202
- new_window                1 3.3450e-07 202
- stddev_roll_belt          1 3.3451e-07 202
- skewness_pitch_forearm    1 3.3454e-07 202
- min_pitch_belt            1 3.3455e-07 202
- magnet_dumbbell_z         1 3.3457e-07 202
- max_roll_belt             1 3.3457e-07 202
- amplitude_roll_belt       1 3.3457e-07 202
- amplitude_roll_dumbbell   1 3.3458e-07 202
- yaw_arm                   1 3.3459e-07 202
- stddev_yaw_belt           1 3.3460e-07 202
- amplitude_pitch_dumbbell  1 3.3462e-07 202
- max_picth_dumbbell        1 3.3462e-07 202
- min_pitch_dumbbell        1 3.3462e-07 202
- max_yaw_belt              1 3.3463e-07 202
- kurtosis_roll_belt        1 3.3464e-07 202
- stddev_roll_arm           1 3.3465e-07 202
- var_total_accel_belt      1 3.3466e-07 202
- var_yaw_belt              1 3.3466e-07 202
- avg_pitch_dumbbell        1 3.3467e-07 202
- min_pitch_forearm         1 3.3468e-07 202
- var_pitch_forearm         1 3.3468e-07 202
- var_roll_dumbbell         1 3.3470e-07 202
- avg_roll_arm              1 3.3471e-07 202
- avg_roll_forearm          1 3.3474e-07 202
- gyros_belt_x              1 3.3476e-07 202
- skewness_pitch_dumbbell   1 3.3477e-07 202
- stddev_yaw_arm            1 3.3477e-07 202
- stddev_pitch_belt         1 3.3479e-07 202
- max_roll_dumbbell         1 3.3485e-07 202
- skewness_roll_belt        1 3.3488e-07 202
- min_roll_arm              1 3.3495e-07 202
- avg_yaw_arm               1 3.3497e-07 202
```

- gyros_dumbbell_x 1 3.3500e-07 202
- var_pitch_belt 1 3.3500e-07 202
- max_picth_arm 1 3.3501e-07 202
- max_yaw_arm 1 3.3501e-07 202
- kurtosis_roll_arm 1 3.3512e-07 202
- accel_belt_z 1 3.3517e-07 202
- min_yaw_arm 1 3.3526e-07 202
- var_accel_arm 1 3.3526e-07 202
- stddev_pitch_forearm 1 3.3535e-07 202
- stddev_yaw_forearm 1 3.3553e-07 202
- var_yaw_forearm 1 3.3559e-07 202
- gyros_dumbbell_z 1 3.3580e-07 202
- max_roll_arm 1 3.3586e-07 202
- magnet_belt_y 1 3.3586e-07 202
- total_accel_arm 1 3.3593e-07 202
- accel_belt_x 1 3.3604e-07 202
- magnet_forearm_y 1 3.3614e-07 202
- gyros_arm_x 1 3.3618e-07 202
- gyros_forearm_x 1 3.3622e-07 202
- roll_arm 1 3.3654e-07 202
- yaw_forearm 1 3.3660e-07 202
- gyros_belt_z 1 3.3672e-07 202
- gyros_arm_y 1 3.3693e-07 202
- accel_dumbbell_z 1 3.3697e-07 202
- yaw_dumbbell 1 3.3725e-07 202
- magnet_arm_x 1 3.3745e-07 202
- magnet_arm_z 1 3.3746e-07 202
- total_accel_forearm 1 3.3747e-07 202
- accel_dumbbell_y 1 3.3760e-07 202
- roll_belt 1 3.3783e-07 202
- magnet_dumbbell_x 1 3.3844e-07 202
- gyros_arm_z 1 3.3959e-07 202
- accel_belt_y 1 3.3993e-07 202
- total_accel_dumbbell 1 3.4027e-07 202
- cvtd_timestamp 1 3.4060e-07 202
- user_name 1 3.4078e-07 202
- raw_timestamp_part_2 1 3.4200e-07 202
- total_accel_belt 1 3.4210e-07 202
- magnet_belt_x 1 3.4236e-07 202
- roll_dumbbell 1 3.4262e-07 202
- pitch_belt 1 3.4263e-07 202
- accel_forearm_x 1 3.4278e-07 202
- accel_dumbbell_x 1 3.4278e-07 202
- gyros_forearm_y 1 3.4350e-07 202
- accel_forearm_y 1 3.4389e-07 202
- gyros_belt_y 1 3.4399e-07 202
- accel_forearm_z 1 3.4420e-07 202
- accel_arm_x 1 3.4459e-07 202
- pitch_dumbbell 1 3.4477e-07 202
- pitch_forearm 1 3.4485e-07 202
- raw_timestamp_part_1 1 3.4639e-07 202
- magnet_belt_z 1 3.4654e-07 202
- gyros_forearm_z 1 3.4911e-07 202
- accel_arm_z 1 3.5207e-07 202
- magnet_forearm_x 1 3.5847e-07 202
- magnet_forearm_z 1 3.6671e-07 202
- magnet_arm_y 1 3.8311e-07 202

```
- accel_arm_y               1 3.8788e-07 202
- pitch_arm                 1 4.1428e-07 202
- num_window                1 6.2104e-07 202
<none>                        3.3442e-07 204

Step:  AIC=202
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + max_roll_belt + max_yaw_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    avg_yaw_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_roll_dumbbell + avg_pitch_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_picth_forearm + skewness_pitch_for
earm +
    max_roll_forearm + max_yaw_forearm + min_roll_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + avg_yaw_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- max_yaw_forearm          1 3.3444e-07 200
- avg_yaw_forearm          1 3.3449e-07 200
- avg_pitch_belt           1 3.3452e-07 200
- kurtosis_picth_belt      1 3.3452e-07 200
- min_roll_forearm         1 3.3453e-07 200
- max_roll_forearm         1 3.3453e-07 200
- amplitude_roll_forearm   1 3.3454e-07 200
- amplitude_roll_belt      1 3.3455e-07 200
- stddev_roll_belt         1 3.3455e-07 200
- new_window               1 3.3456e-07 200
- kurtosis_picth_forearm   1 3.3457e-07 200
- skewness_pitch_forearm   1 3.3458e-07 200
- amplitude_roll_dumbbell  1 3.3459e-07 200
- stddev_yaw_belt          1 3.3460e-07 200
- magnet_dumbbell_z        1 3.3460e-07 200
- min_pitch_belt           1 3.3461e-07 200
- max_roll_belt            1 3.3462e-07 200
- yaw_arm                  1 3.3462e-07 200
- avg_pitch_dumbbell       1 3.3463e-07 200
```

- amplitude_pitch_dumbbell 1 3.3466e-07 200
- max_picth_dumbbell   1 3.3466e-07 200
- min_pitch_dumbbell   1 3.3466e-07 200
- stddev_roll_arm   1 3.3466e-07 200
- min_pitch_forearm   1 3.3467e-07 200
- avg_roll_arm   1 3.3468e-07 200
- max_yaw_belt   1 3.3468e-07 200
- kurtosis_roll_belt   1 3.3469e-07 200
- var_total_accel_belt   1 3.3471e-07 200
- var_yaw_belt   1 3.3471e-07 200
- var_roll_dumbbell   1 3.3471e-07 200
- avg_roll_forearm   1 3.3472e-07 200
- var_pitch_forearm   1 3.3475e-07 200
- gyros_belt_x   1 3.3479e-07 200
- stddev_pitch_belt   1 3.3479e-07 200
- skewness_pitch_dumbbell   1 3.3483e-07 200
- stddev_yaw_arm   1 3.3483e-07 200
- max_roll_dumbbell   1 3.3484e-07 200
- skewness_roll_belt   1 3.3490e-07 200
- min_roll_arm   1 3.3496e-07 200
- avg_yaw_arm   1 3.3497e-07 200
- var_pitch_belt   1 3.3498e-07 200
- max_picth_arm   1 3.3500e-07 200
- max_yaw_arm   1 3.3501e-07 200
- gyros_dumbbell_x   1 3.3505e-07 200
- kurtosis_roll_arm   1 3.3517e-07 200
- accel_belt_z   1 3.3519e-07 200
- var_accel_arm   1 3.3525e-07 200
- min_yaw_arm   1 3.3526e-07 200
- stddev_pitch_forearm   1 3.3529e-07 200
- stddev_yaw_forearm   1 3.3552e-07 200
- var_yaw_forearm   1 3.3557e-07 200
- gyros_dumbbell_z   1 3.3586e-07 200
- max_roll_arm   1 3.3587e-07 200
- magnet_belt_y   1 3.3590e-07 200
- total_accel_arm   1 3.3596e-07 200
- accel_belt_x   1 3.3606e-07 200
- magnet_forearm_y   1 3.3619e-07 200
- gyros_arm_x   1 3.3620e-07 200
- gyros_forearm_x   1 3.3630e-07 200
- roll_arm   1 3.3658e-07 200
- yaw_forearm   1 3.3662e-07 200
- gyros_belt_z   1 3.3677e-07 200
- gyros_arm_y   1 3.3694e-07 200
- accel_dumbbell_z   1 3.3697e-07 200
- yaw_dumbbell   1 3.3730e-07 200
- magnet_arm_x   1 3.3749e-07 200
- magnet_arm_z   1 3.3749e-07 200
- total_accel_forearm   1 3.3753e-07 200
- accel_dumbbell_y   1 3.3768e-07 200
- roll_belt   1 3.3792e-07 200
- magnet_dumbbell_x   1 3.3856e-07 200
- gyros_arm_z   1 3.3964e-07 200
- accel_belt_y   1 3.3995e-07 200
- total_accel_dumbbell   1 3.4028e-07 200
- cvtd_timestamp   1 3.4065e-07 200
- user_name   1 3.4077e-07 200

```
- raw_timestamp_part_2      1 3.4197e-07 200
- total_accel_belt          1 3.4213e-07 200
- magnet_belt_x             1 3.4228e-07 200
- pitch_belt                1 3.4265e-07 200
- roll_dumbbell             1 3.4272e-07 200
- accel_forearm_x           1 3.4281e-07 200
- accel_dumbbell_x          1 3.4286e-07 200
- gyros_forearm_y           1 3.4353e-07 200
- accel_forearm_y           1 3.4401e-07 200
- gyros_belt_y              1 3.4401e-07 200
- accel_forearm_z           1 3.4422e-07 200
- accel_arm_x               1 3.4462e-07 200
- pitch_dumbbell            1 3.4481e-07 200
- pitch_forearm             1 3.4490e-07 200
- raw_timestamp_part_1      1 3.4644e-07 200
- magnet_belt_z             1 3.4659e-07 200
- gyros_forearm_z           1 3.4920e-07 200
- accel_arm_z               1 3.5222e-07 200
- magnet_forearm_x          1 3.5850e-07 200
- magnet_forearm_z          1 3.6679e-07 200
- magnet_arm_y              1 3.8341e-07 200
- accel_arm_y               1 3.8798e-07 200
- pitch_arm                 1 4.1427e-07 200
- num_window                1 6.2125e-07 200
<none>                        3.3445e-07 202

Step:  AIC=200
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + max_roll_belt + max_yaw_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    avg_yaw_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_roll_dumbbell + avg_pitch_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_picth_forearm + skewness_pitch_for
earm +
    max_roll_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + avg_yaw_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z
```

	Df	Deviance	AIC
- avg_yaw_forearm	1	3.3449e-07	198
- kurtosis_picth_belt	1	3.3450e-07	198
- min_roll_forearm	1	3.3453e-07	198
- max_roll_forearm	1	3.3453e-07	198
- avg_pitch_belt	1	3.3453e-07	198
- amplitude_roll_forearm	1	3.3454e-07	198
- kurtosis_picth_forearm	1	3.3455e-07	198
- new_window	1	3.3456e-07	198
- skewness_pitch_forearm	1	3.3457e-07	198
- amplitude_roll_belt	1	3.3459e-07	198
- magnet_dumbbell_z	1	3.3460e-07	198
- min_pitch_belt	1	3.3461e-07	198
- stddev_roll_belt	1	3.3462e-07	198
- amplitude_roll_dumbbell	1	3.3462e-07	198
- max_roll_belt	1	3.3463e-07	198
- stddev_yaw_belt	1	3.3463e-07	198
- yaw_arm	1	3.3465e-07	198
- avg_pitch_dumbbell	1	3.3467e-07	198
- max_yaw_belt	1	3.3468e-07	198
- stddev_roll_arm	1	3.3468e-07	198
- kurtosis_roll_belt	1	3.3469e-07	198
- amplitude_pitch_dumbbell	1	3.3469e-07	198
- max_picth_dumbbell	1	3.3469e-07	198
- avg_roll_arm	1	3.3469e-07	198
- min_pitch_dumbbell	1	3.3469e-07	198
- min_pitch_forearm	1	3.3469e-07	198
- var_total_accel_belt	1	3.3472e-07	198
- avg_roll_forearm	1	3.3473e-07	198
- var_yaw_belt	1	3.3473e-07	198
- var_pitch_forearm	1	3.3475e-07	198
- var_roll_dumbbell	1	3.3478e-07	198
- gyros_belt_x	1	3.3481e-07	198
- stddev_pitch_belt	1	3.3483e-07	198
- skewness_pitch_dumbbell	1	3.3484e-07	198
- max_roll_dumbbell	1	3.3486e-07	198
- stddev_yaw_arm	1	3.3487e-07	198
- skewness_roll_belt	1	3.3492e-07	198
- var_pitch_belt	1	3.3499e-07	198
- max_yaw_arm	1	3.3500e-07	198
- avg_yaw_arm	1	3.3500e-07	198
- max_picth_arm	1	3.3503e-07	198
- gyros_dumbbell_x	1	3.3504e-07	198
- kurtosis_roll_arm	1	3.3512e-07	198
- min_roll_arm	1	3.3516e-07	198
- accel_belt_z	1	3.3520e-07	198
- var_accel_arm	1	3.3528e-07	198
- min_yaw_arm	1	3.3528e-07	198
- stddev_pitch_forearm	1	3.3530e-07	198
- stddev_yaw_forearm	1	3.3553e-07	198
- var_yaw_forearm	1	3.3557e-07	198
- gyros_dumbbell_z	1	3.3585e-07	198
- total_accel_arm	1	3.3595e-07	198
- magnet_belt_y	1	3.3599e-07	198
- max_roll_arm	1	3.3599e-07	198
- accel_belt_x	1	3.3604e-07	198
- gyros_arm_x	1	3.3617e-07	198

```
- magnet_forearm_y          1 3.3619e-07 198
- gyros_forearm_x           1 3.3633e-07 198
- roll_arm                  1 3.3656e-07 198
- yaw_forearm               1 3.3667e-07 198
- gyros_belt_z              1 3.3680e-07 198
- gyros_arm_y               1 3.3692e-07 198
- accel_dumbbell_z          1 3.3699e-07 198
- yaw_dumbbell              1 3.3728e-07 198
- magnet_arm_x              1 3.3744e-07 198
- magnet_arm_z              1 3.3751e-07 198
- total_accel_forearm       1 3.3759e-07 198
- accel_dumbbell_y          1 3.3764e-07 198
- roll_belt                 1 3.3782e-07 198
- magnet_dumbbell_x         1 3.3860e-07 198
- gyros_arm_z               1 3.3965e-07 198
- accel_belt_y              1 3.3995e-07 198
- total_accel_dumbbell      1 3.4036e-07 198
- cvtd_timestamp            1 3.4067e-07 198
- user_name                 1 3.4075e-07 198
- raw_timestamp_part_2      1 3.4197e-07 198
- total_accel_belt          1 3.4213e-07 198
- magnet_belt_x             1 3.4230e-07 198
- pitch_belt                1 3.4267e-07 198
- roll_dumbbell             1 3.4272e-07 198
- accel_dumbbell_x          1 3.4285e-07 198
- accel_forearm_x           1 3.4286e-07 198
- gyros_forearm_y           1 3.4352e-07 198
- accel_forearm_y           1 3.4405e-07 198
- gyros_belt_y              1 3.4405e-07 198
- accel_forearm_z           1 3.4423e-07 198
- accel_arm_x               1 3.4466e-07 198
- pitch_dumbbell            1 3.4485e-07 198
- pitch_forearm             1 3.4519e-07 198
- raw_timestamp_part_1      1 3.4639e-07 198
- magnet_belt_z             1 3.4658e-07 198
- gyros_forearm_z           1 3.4913e-07 198
- accel_arm_z               1 3.5218e-07 198
- magnet_forearm_x          1 3.5853e-07 198
- magnet_forearm_z          1 3.6679e-07 198
- magnet_arm_y              1 3.8318e-07 198
- accel_arm_y               1 3.8800e-07 198
- pitch_arm                 1 4.1436e-07 198
- num_window                1 6.2136e-07 198
<none>                        3.3444e-07 200

Step:  AIC=198
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + kurtosis_picth_belt +
    skewness_roll_belt + max_roll_belt + max_yaw_belt + min_pitch_belt +
    amplitude_roll_belt + var_total_accel_belt + stddev_roll_belt +
    avg_pitch_belt + stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + yaw_arm +
    total_accel_arm + var_accel_arm + avg_roll_arm + stddev_roll_arm +
    avg_yaw_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
```

```
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_roll_dumbbell + avg_pitch_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_picth_forearm + skewness_pitch_for
earm +
    max_roll_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- kurtosis_picth_belt      1 3.3453e-07 196
- skewness_pitch_forearm   1 3.3456e-07 196
- amplitude_roll_dumbbell  1 3.3458e-07 196
- kurtosis_picth_forearm   1 3.3458e-07 196
- stddev_roll_belt         1 3.3458e-07 196
- new_window               1 3.3459e-07 196
- avg_pitch_belt           1 3.3460e-07 196
- min_roll_forearm         1 3.3462e-07 196
- max_roll_forearm         1 3.3462e-07 196
- amplitude_roll_forearm   1 3.3462e-07 196
- min_pitch_belt           1 3.3463e-07 196
- amplitude_roll_belt      1 3.3463e-07 196
- magnet_dumbbell_z        1 3.3465e-07 196
- max_roll_belt            1 3.3466e-07 196
- avg_pitch_dumbbell       1 3.3467e-07 196
- yaw_arm                  1 3.3467e-07 196
- avg_roll_arm             1 3.3468e-07 196
- amplitude_pitch_dumbbell 1 3.3469e-07 196
- stddev_yaw_belt          1 3.3469e-07 196
- max_picth_dumbbell       1 3.3469e-07 196
- min_pitch_dumbbell       1 3.3469e-07 196
- min_pitch_forearm        1 3.3472e-07 196
- stddev_roll_arm          1 3.3472e-07 196
- max_yaw_belt             1 3.3472e-07 196
- var_total_accel_belt     1 3.3472e-07 196
- kurtosis_roll_belt       1 3.3473e-07 196
- var_yaw_belt             1 3.3477e-07 196
- var_roll_dumbbell        1 3.3478e-07 196
- var_pitch_forearm        1 3.3479e-07 196
- stddev_pitch_belt        1 3.3480e-07 196
- stddev_yaw_arm           1 3.3482e-07 196
- max_roll_dumbbell        1 3.3482e-07 196
- gyros_belt_x             1 3.3485e-07 196
- skewness_pitch_dumbbell  1 3.3485e-07 196
- avg_yaw_arm              1 3.3495e-07 196
- skewness_roll_belt       1 3.3496e-07 196
- max_picth_arm            1 3.3499e-07 196
```

- var_pitch_belt 1 3.3502e-07 196
- avg_roll_forearm 1 3.3507e-07 196
- gyros_dumbbell_x 1 3.3508e-07 196
- max_yaw_arm 1 3.3516e-07 196
- accel_belt_z 1 3.3524e-07 196
- var_accel_arm 1 3.3530e-07 196
- min_yaw_arm 1 3.3532e-07 196
- kurtosis_roll_arm 1 3.3533e-07 196
- stddev_pitch_forearm 1 3.3533e-07 196
- min_roll_arm 1 3.3534e-07 196
- stddev_yaw_forearm 1 3.3581e-07 196
- var_yaw_forearm 1 3.3583e-07 196
- gyros_dumbbell_z 1 3.3584e-07 196
- magnet_belt_y 1 3.3596e-07 196
- total_accel_arm 1 3.3599e-07 196
- accel_belt_x 1 3.3610e-07 196
- max_roll_arm 1 3.3612e-07 196
- gyros_arm_x 1 3.3616e-07 196
- magnet_forearm_y 1 3.3620e-07 196
- gyros_forearm_x 1 3.3631e-07 196
- roll_arm 1 3.3657e-07 196
- yaw_forearm 1 3.3671e-07 196
- gyros_belt_z 1 3.3682e-07 196
- gyros_arm_y 1 3.3695e-07 196
- accel_dumbbell_z 1 3.3703e-07 196
- yaw_dumbbell 1 3.3725e-07 196
- magnet_arm_x 1 3.3753e-07 196
- total_accel_forearm 1 3.3755e-07 196
- magnet_arm_z 1 3.3756e-07 196
- accel_dumbbell_y 1 3.3774e-07 196
- roll_belt 1 3.3791e-07 196
- magnet_dumbbell_x 1 3.3853e-07 196
- gyros_arm_z 1 3.3969e-07 196
- accel_belt_y 1 3.3998e-07 196
- total_accel_dumbbell 1 3.4030e-07 196
- cvtd_timestamp 1 3.4074e-07 196
- user_name 1 3.4084e-07 196
- raw_timestamp_part_2 1 3.4193e-07 196
- total_accel_belt 1 3.4209e-07 196
- magnet_belt_x 1 3.4231e-07 196
- roll_dumbbell 1 3.4275e-07 196
- pitch_belt 1 3.4275e-07 196
- accel_dumbbell_x 1 3.4282e-07 196
- accel_forearm_x 1 3.4287e-07 196
- gyros_forearm_y 1 3.4361e-07 196
- accel_forearm_y 1 3.4403e-07 196
- gyros_belt_y 1 3.4406e-07 196
- accel_forearm_z 1 3.4427e-07 196
- accel_arm_x 1 3.4459e-07 196
- pitch_dumbbell 1 3.4485e-07 196
- pitch_forearm 1 3.4495e-07 196
- raw_timestamp_part_1 1 3.4641e-07 196
- magnet_belt_z 1 3.4662e-07 196
- gyros_forearm_z 1 3.4923e-07 196
- accel_arm_z 1 3.5217e-07 196
- magnet_forearm_x 1 3.5860e-07 196
- magnet_forearm_z 1 3.6677e-07 196

```
- magnet_arm_y              1 3.8317e-07 196
- accel_arm_y               1 3.8799e-07 196
- pitch_arm                 1 4.1441e-07 196
- num_window                1 6.2147e-07 196
<none>                        3.3449e-07 198

Step:  AIC=196
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + avg_yaw_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_roll_dumbbell + avg_pitch_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + kurtosis_picth_forearm + skewness_pitch_for
earm +
    max_roll_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                           Df   Deviance AIC
- kurtosis_picth_forearm    1 3.3456e-07 194
- stddev_roll_belt          1 3.3457e-07 194
- avg_pitch_belt            1 3.3460e-07 194
- min_roll_forearm          1 3.3461e-07 194
- max_roll_forearm          1 3.3461e-07 194
- amplitude_roll_forearm    1 3.3461e-07 194
- skewness_pitch_forearm    1 3.3462e-07 194
- avg_pitch_dumbbell        1 3.3465e-07 194
- new_window                1 3.3466e-07 194
- var_total_accel_belt      1 3.3468e-07 194
- yaw_arm                   1 3.3468e-07 194
- magnet_dumbbell_z         1 3.3469e-07 194
- min_pitch_belt            1 3.3470e-07 194
- amplitude_roll_belt       1 3.3470e-07 194
- amplitude_pitch_dumbbell  1 3.3470e-07 194
- max_picth_dumbbell        1 3.3470e-07 194
- min_pitch_dumbbell        1 3.3471e-07 194
- max_roll_belt             1 3.3471e-07 194
- amplitude_roll_dumbbell   1 3.3471e-07 194
```

- stddev_yaw_belt 1 3.3472e-07 194
- avg_roll_arm 1 3.3472e-07 194
- max_yaw_belt 1 3.3473e-07 194
- kurtosis_roll_belt 1 3.3473e-07 194
- var_pitch_forearm 1 3.3476e-07 194
- stddev_roll_arm 1 3.3477e-07 194
- var_yaw_belt 1 3.3477e-07 194
- var_roll_dumbbell 1 3.3478e-07 194
- stddev_yaw_arm 1 3.3482e-07 194
- stddev_pitch_belt 1 3.3484e-07 194
- min_pitch_forearm 1 3.3485e-07 194
- skewness_pitch_dumbbell 1 3.3486e-07 194
- gyros_belt_x 1 3.3488e-07 194
- max_roll_dumbbell 1 3.3494e-07 194
- avg_yaw_arm 1 3.3496e-07 194
- skewness_roll_belt 1 3.3496e-07 194
- var_pitch_belt 1 3.3501e-07 194
- max_picth_arm 1 3.3503e-07 194
- avg_roll_forearm 1 3.3504e-07 194
- gyros_dumbbell_x 1 3.3511e-07 194
- max_yaw_arm 1 3.3517e-07 194
- accel_belt_z 1 3.3526e-07 194
- kurtosis_roll_arm 1 3.3528e-07 194
- var_accel_arm 1 3.3530e-07 194
- stddev_pitch_forearm 1 3.3536e-07 194
- min_yaw_arm 1 3.3540e-07 194
- min_roll_arm 1 3.3550e-07 194
- gyros_dumbbell_z 1 3.3585e-07 194
- stddev_yaw_forearm 1 3.3588e-07 194
- var_yaw_forearm 1 3.3596e-07 194
- magnet_belt_y 1 3.3598e-07 194
- total_accel_arm 1 3.3599e-07 194
- accel_belt_x 1 3.3615e-07 194
- magnet_forearm_y 1 3.3623e-07 194
- gyros_arm_x 1 3.3625e-07 194
- max_roll_arm 1 3.3627e-07 194
- gyros_forearm_x 1 3.3631e-07 194
- roll_arm 1 3.3662e-07 194
- yaw_forearm 1 3.3669e-07 194
- gyros_belt_z 1 3.3683e-07 194
- gyros_arm_y 1 3.3699e-07 194
- accel_dumbbell_z 1 3.3705e-07 194
- yaw_dumbbell 1 3.3730e-07 194
- total_accel_forearm 1 3.3754e-07 194
- magnet_arm_x 1 3.3756e-07 194
- magnet_arm_z 1 3.3761e-07 194
- accel_dumbbell_y 1 3.3774e-07 194
- roll_belt 1 3.3790e-07 194
- magnet_dumbbell_x 1 3.3846e-07 194
- gyros_arm_z 1 3.3968e-07 194
- accel_belt_y 1 3.3999e-07 194
- total_accel_dumbbell 1 3.4029e-07 194
- cvtd_timestamp 1 3.4079e-07 194
- user_name 1 3.4087e-07 194
- raw_timestamp_part_2 1 3.4202e-07 194
- total_accel_belt 1 3.4212e-07 194
- magnet_belt_x 1 3.4240e-07 194

```
- roll_dumbbell             1 3.4276e-07 194
- pitch_belt                1 3.4280e-07 194
- accel_dumbbell_x          1 3.4280e-07 194
- accel_forearm_x           1 3.4289e-07 194
- gyros_forearm_y           1 3.4361e-07 194
- accel_forearm_y           1 3.4405e-07 194
- gyros_belt_y              1 3.4409e-07 194
- accel_forearm_z           1 3.4433e-07 194
- accel_arm_x               1 3.4456e-07 194
- pitch_dumbbell            1 3.4484e-07 194
- pitch_forearm             1 3.4543e-07 194
- raw_timestamp_part_1      1 3.4648e-07 194
- magnet_belt_z             1 3.4664e-07 194
- gyros_forearm_z           1 3.4922e-07 194
- accel_arm_z               1 3.5222e-07 194
- magnet_forearm_x          1 3.5865e-07 194
- magnet_forearm_z          1 3.6684e-07 194
- magnet_arm_y              1 3.8327e-07 194
- accel_arm_y               1 3.8801e-07 194
- pitch_arm                 1 4.1442e-07 194
- num_window                1 6.2151e-07 194
<none>                        3.3453e-07 196

Step:  AIC=194
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_roll_belt + avg_pitch_belt +
    stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + avg_yaw_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + max_picth_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + amplitude_pitch_dumbbell + total_accel_dumbbell
+
    var_roll_dumbbell + avg_pitch_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + max_roll_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    total_accel_forearm + avg_roll_forearm + stddev_pitch_forearm +
    var_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df   Deviance AIC
- stddev_roll_belt         1 3.3461e-07 192
- avg_pitch_belt           1 3.3462e-07 192
- min_roll_forearm         1 3.3465e-07 192
```

- max_roll_forearm 1 3.3465e-07 192
- amplitude_roll_forearm 1 3.3466e-07 192
- amplitude_pitch_dumbbell 1 3.3469e-07 192
- max_picth_dumbbell 1 3.3469e-07 192
- min_pitch_dumbbell 1 3.3469e-07 192
- avg_pitch_dumbbell 1 3.3471e-07 192
- var_total_accel_belt 1 3.3471e-07 192
- amplitude_roll_dumbbell 1 3.3474e-07 192
- magnet_dumbbell_z 1 3.3474e-07 192
- yaw_arm 1 3.3475e-07 192
- new_window 1 3.3476e-07 192
- max_roll_belt 1 3.3476e-07 192
- min_pitch_belt 1 3.3476e-07 192
- avg_roll_arm 1 3.3478e-07 192
- amplitude_roll_belt 1 3.3480e-07 192
- stddev_roll_arm 1 3.3480e-07 192
- var_roll_dumbbell 1 3.3484e-07 192
- stddev_yaw_belt 1 3.3484e-07 192
- var_pitch_forearm 1 3.3485e-07 192
- stddev_pitch_belt 1 3.3490e-07 192
- stddev_yaw_arm 1 3.3491e-07 192
- var_yaw_belt 1 3.3491e-07 192
- skewness_pitch_dumbbell 1 3.3493e-07 192
- gyros_belt_x 1 3.3495e-07 192
- avg_yaw_arm 1 3.3497e-07 192
- max_roll_dumbbell 1 3.3498e-07 192
- min_pitch_forearm 1 3.3499e-07 192
- skewness_pitch_forearm 1 3.3502e-07 192
- max_yaw_belt 1 3.3502e-07 192
- kurtosis_roll_belt 1 3.3503e-07 192
- max_picth_arm 1 3.3503e-07 192
- avg_roll_forearm 1 3.3503e-07 192
- skewness_roll_belt 1 3.3512e-07 192
- var_pitch_belt 1 3.3513e-07 192
- max_yaw_arm 1 3.3516e-07 192
- gyros_dumbbell_x 1 3.3518e-07 192
- var_accel_arm 1 3.3530e-07 192
- accel_belt_z 1 3.3534e-07 192
- min_yaw_arm 1 3.3541e-07 192
- stddev_pitch_forearm 1 3.3542e-07 192
- kurtosis_roll_arm 1 3.3546e-07 192
- min_roll_arm 1 3.3567e-07 192
- stddev_yaw_forearm 1 3.3588e-07 192
- gyros_dumbbell_z 1 3.3590e-07 192
- var_yaw_forearm 1 3.3593e-07 192
- total_accel_arm 1 3.3602e-07 192
- magnet_belt_y 1 3.3607e-07 192
- accel_belt_x 1 3.3622e-07 192
- magnet_forearm_y 1 3.3628e-07 192
- gyros_arm_x 1 3.3632e-07 192
- gyros_forearm_x 1 3.3640e-07 192
- max_roll_arm 1 3.3650e-07 192
- roll_arm 1 3.3661e-07 192
- yaw_forearm 1 3.3683e-07 192
- gyros_belt_z 1 3.3691e-07 192
- gyros_arm_y 1 3.3710e-07 192
- accel_dumbbell_z 1 3.3723e-07 192

```
- yaw_dumbbell              1 3.3744e-07 192
- magnet_arm_x              1 3.3763e-07 192
- total_accel_forearm       1 3.3765e-07 192
- magnet_arm_z              1 3.3770e-07 192
- accel_dumbbell_y          1 3.3787e-07 192
- roll_belt                 1 3.3801e-07 192
- magnet_dumbbell_x         1 3.3852e-07 192
- gyros_arm_z               1 3.3984e-07 192
- accel_belt_y              1 3.4022e-07 192
- total_accel_dumbbell      1 3.4039e-07 192
- cvtd_timestamp            1 3.4084e-07 192
- user_name                 1 3.4092e-07 192
- raw_timestamp_part_2      1 3.4212e-07 192
- total_accel_belt          1 3.4219e-07 192
- magnet_belt_x             1 3.4245e-07 192
- pitch_belt                1 3.4285e-07 192
- roll_dumbbell             1 3.4295e-07 192
- accel_dumbbell_x          1 3.4300e-07 192
- accel_forearm_x           1 3.4307e-07 192
- gyros_forearm_y           1 3.4376e-07 192
- gyros_belt_y              1 3.4416e-07 192
- accel_forearm_y           1 3.4423e-07 192
- accel_forearm_z           1 3.4447e-07 192
- accel_arm_x               1 3.4470e-07 192
- pitch_forearm             1 3.4510e-07 192
- pitch_dumbbell            1 3.4512e-07 192
- raw_timestamp_part_1      1 3.4654e-07 192
- magnet_belt_z             1 3.4675e-07 192
- gyros_forearm_z           1 3.4942e-07 192
- accel_arm_z               1 3.5239e-07 192
- magnet_forearm_x          1 3.5884e-07 192
- magnet_forearm_z          1 3.6700e-07 192
- magnet_arm_y              1 3.8349e-07 192
- accel_arm_y               1 3.8815e-07 192
- pitch_arm                 1 4.1449e-07 192
- num_window                1 6.2165e-07 192
<none>                        3.3456e-07 194

Step:  AIC=192
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + avg_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    max_picth_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    amplitude_pitch_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    avg_pitch_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
```

```
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + max_roll_forearm + min_roll_forearm +
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + var_pitch_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                           Df   Deviance AIC
- avg_pitch_belt            1 3.3466e-07 190
- min_roll_forearm          1 3.3467e-07 190
- max_roll_forearm          1 3.3467e-07 190
- amplitude_roll_forearm    1 3.3468e-07 190
- amplitude_pitch_dumbbell  1 3.3471e-07 190
- max_picth_dumbbell        1 3.3471e-07 190
- min_pitch_dumbbell        1 3.3471e-07 190
- avg_pitch_dumbbell        1 3.3473e-07 190
- var_total_accel_belt      1 3.3475e-07 190
- magnet_dumbbell_z         1 3.3479e-07 190
- yaw_arm                   1 3.3480e-07 190
- avg_roll_arm              1 3.3480e-07 190
- max_roll_belt             1 3.3480e-07 190
- min_pitch_belt            1 3.3482e-07 190
- amplitude_roll_dumbbell   1 3.3482e-07 190
- new_window                1 3.3483e-07 190
- amplitude_roll_belt       1 3.3484e-07 190
- var_roll_dumbbell         1 3.3485e-07 190
- stddev_roll_arm           1 3.3486e-07 190
- stddev_yaw_belt           1 3.3488e-07 190
- stddev_yaw_arm            1 3.3491e-07 190
- var_pitch_forearm         1 3.3491e-07 190
- stddev_pitch_belt         1 3.3492e-07 190
- var_yaw_belt              1 3.3495e-07 190
- avg_yaw_arm               1 3.3497e-07 190
- gyros_belt_x              1 3.3499e-07 190
- max_roll_dumbbell         1 3.3499e-07 190
- skewness_pitch_dumbbell   1 3.3501e-07 190
- max_picth_arm             1 3.3502e-07 190
- avg_roll_forearm          1 3.3503e-07 190
- min_pitch_forearm         1 3.3504e-07 190
- skewness_pitch_forearm    1 3.3510e-07 190
- max_yaw_belt              1 3.3512e-07 190
- skewness_roll_belt        1 3.3512e-07 190
- var_pitch_belt            1 3.3513e-07 190
- kurtosis_roll_belt        1 3.3513e-07 190
- max_yaw_arm               1 3.3516e-07 190
- gyros_dumbbell_x          1 3.3521e-07 190
- var_accel_arm             1 3.3534e-07 190
- accel_belt_z              1 3.3537e-07 190
- min_yaw_arm               1 3.3546e-07 190
- stddev_pitch_forearm      1 3.3546e-07 190
- kurtosis_roll_arm         1 3.3556e-07 190
- min_roll_arm              1 3.3576e-07 190
- stddev_yaw_forearm        1 3.3592e-07 190
- gyros_dumbbell_z          1 3.3593e-07 190
- var_yaw_forearm           1 3.3599e-07 190
```

```
- total_accel_arm           1 3.3606e-07 190
- magnet_belt_y             1 3.3611e-07 190
- accel_belt_x              1 3.3627e-07 190
- magnet_forearm_y          1 3.3632e-07 190
- gyros_arm_x               1 3.3634e-07 190
- gyros_forearm_x           1 3.3643e-07 190
- roll_arm                  1 3.3667e-07 190
- yaw_forearm               1 3.3688e-07 190
- gyros_belt_z              1 3.3696e-07 190
- gyros_arm_y               1 3.3711e-07 190
- accel_dumbbell_z          1 3.3733e-07 190
- yaw_dumbbell              1 3.3753e-07 190
- magnet_arm_x              1 3.3764e-07 190
- total_accel_forearm       1 3.3769e-07 190
- magnet_arm_z              1 3.3775e-07 190
- accel_dumbbell_y          1 3.3794e-07 190
- roll_belt                 1 3.3803e-07 190
- magnet_dumbbell_x         1 3.3864e-07 190
- gyros_arm_z               1 3.3990e-07 190
- accel_belt_y              1 3.4026e-07 190
- total_accel_dumbbell      1 3.4037e-07 190
- cvtd_timestamp            1 3.4090e-07 190
- user_name                 1 3.4106e-07 190
- raw_timestamp_part_2      1 3.4222e-07 190
- total_accel_belt          1 3.4225e-07 190
- magnet_belt_x             1 3.4247e-07 190
- pitch_belt                1 3.4289e-07 190
- roll_dumbbell             1 3.4297e-07 190
- accel_dumbbell_x          1 3.4305e-07 190
- accel_forearm_x           1 3.4315e-07 190
- gyros_forearm_y           1 3.4384e-07 190
- gyros_belt_y              1 3.4419e-07 190
- accel_forearm_y           1 3.4426e-07 190
- accel_forearm_z           1 3.4449e-07 190
- accel_arm_x               1 3.4479e-07 190
- pitch_forearm             1 3.4509e-07 190
- pitch_dumbbell            1 3.4518e-07 190
- raw_timestamp_part_1      1 3.4660e-07 190
- magnet_belt_z             1 3.4680e-07 190
- gyros_forearm_z           1 3.4946e-07 190
- accel_arm_z               1 3.5245e-07 190
- magnet_forearm_x          1 3.5896e-07 190
- magnet_forearm_z          1 3.6693e-07 190
- magnet_arm_y              1 3.8342e-07 190
- accel_arm_y               1 3.8827e-07 190
- pitch_arm                 1 4.1461e-07 190
- num_window                1 6.2164e-07 190
- max_roll_arm              1 1.6015e-06 190
<none>                        3.3461e-07 192

Step:  AIC=190
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
```

```
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + amplitude_pitch_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + avg_pitch_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    max_roll_forearm + min_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z



                            Df   Deviance AIC
- amplitude_pitch_dumbbell   1 3.3473e-07 188
- max_picth_dumbbell         1 3.3473e-07 188
- min_pitch_dumbbell         1 3.3473e-07 188
- var_total_accel_belt       1 3.3474e-07 188
- avg_pitch_dumbbell         1 3.3475e-07 188
- min_roll_forearm           1 3.3475e-07 188
- max_roll_forearm           1 3.3475e-07 188
- amplitude_roll_forearm     1 3.3475e-07 188
- var_roll_dumbbell          1 3.3476e-07 188
- amplitude_roll_dumbbell    1 3.3483e-07 188
- avg_roll_arm               1 3.3484e-07 188
- yaw_arm                    1 3.3484e-07 188
- magnet_dumbbell_z          1 3.3484e-07 188
- new_window                 1 3.3485e-07 188
- var_pitch_forearm          1 3.3490e-07 188
- stddev_roll_arm            1 3.3491e-07 188
- amplitude_roll_belt        1 3.3491e-07 188
- max_roll_belt              1 3.3491e-07 188
- min_pitch_belt             1 3.3491e-07 188
- stddev_yaw_arm             1 3.3493e-07 188
- stddev_yaw_belt            1 3.3497e-07 188
- max_roll_dumbbell          1 3.3499e-07 188
- skewness_pitch_dumbbell    1 3.3500e-07 188
- stddev_pitch_belt          1 3.3500e-07 188
- avg_yaw_arm                1 3.3502e-07 188
- gyros_belt_x               1 3.3503e-07 188
- max_picth_arm              1 3.3504e-07 188
- avg_roll_forearm           1 3.3506e-07 188
- var_yaw_belt               1 3.3506e-07 188
- skewness_pitch_forearm     1 3.3509e-07 188
- var_pitch_belt             1 3.3514e-07 188
```

- min_pitch_forearm 1 3.3515e-07 188
- max_yaw_arm 1 3.3520e-07 188
- max_yaw_belt 1 3.3522e-07 188
- kurtosis_roll_belt 1 3.3523e-07 188
- gyros_dumbbell_x 1 3.3523e-07 188
- skewness_roll_belt 1 3.3525e-07 188
- var_accel_arm 1 3.3534e-07 188
- accel_belt_z 1 3.3540e-07 188
- min_yaw_arm 1 3.3546e-07 188
- stddev_pitch_forearm 1 3.3548e-07 188
- kurtosis_roll_arm 1 3.3574e-07 188
- min_roll_arm 1 3.3583e-07 188
- stddev_yaw_forearm 1 3.3596e-07 188
- gyros_dumbbell_z 1 3.3609e-07 188
- total_accel_arm 1 3.3617e-07 188
- magnet_belt_y 1 3.3624e-07 188
- magnet_forearm_y 1 3.3633e-07 188
- gyros_arm_x 1 3.3640e-07 188
- accel_belt_x 1 3.3640e-07 188
- gyros_forearm_x 1 3.3645e-07 188
- max_roll_arm 1 3.3655e-07 188
- roll_arm 1 3.3673e-07 188
- yaw_forearm 1 3.3694e-07 188
- gyros_belt_z 1 3.3701e-07 188
- gyros_arm_y 1 3.3720e-07 188
- accel_dumbbell_z 1 3.3748e-07 188
- yaw_dumbbell 1 3.3757e-07 188
- total_accel_forearm 1 3.3768e-07 188
- magnet_arm_x 1 3.3778e-07 188
- magnet_arm_z 1 3.3796e-07 188
- roll_belt 1 3.3802e-07 188
- accel_dumbbell_y 1 3.3808e-07 188
- magnet_dumbbell_x 1 3.3854e-07 188
- gyros_arm_z 1 3.3990e-07 188
- total_accel_dumbbell 1 3.4034e-07 188
- accel_belt_y 1 3.4037e-07 188
- cvtd_timestamp 1 3.4094e-07 188
- user_name 1 3.4110e-07 188
- raw_timestamp_part_2 1 3.4222e-07 188
- total_accel_belt 1 3.4234e-07 188
- magnet_belt_x 1 3.4264e-07 188
- pitch_belt 1 3.4285e-07 188
- roll_dumbbell 1 3.4311e-07 188
- accel_dumbbell_x 1 3.4312e-07 188
- accel_forearm_x 1 3.4328e-07 188
- gyros_forearm_y 1 3.4411e-07 188
- accel_forearm_y 1 3.4425e-07 188
- gyros_belt_y 1 3.4439e-07 188
- accel_forearm_z 1 3.4471e-07 188
- accel_arm_x 1 3.4493e-07 188
- pitch_forearm 1 3.4520e-07 188
- pitch_dumbbell 1 3.4527e-07 188
- raw_timestamp_part_1 1 3.4669e-07 188
- magnet_belt_z 1 3.4680e-07 188
- gyros_forearm_z 1 3.4968e-07 188
- accel_arm_z 1 3.5254e-07 188
- magnet_forearm_x 1 3.5907e-07 188

```
- magnet_forearm_z          1 3.6708e-07 188
- magnet_arm_y              1 3.8388e-07 188
- accel_arm_y               1 3.8846e-07 188
- pitch_arm                 1 4.1482e-07 188
- num_window                1 6.2167e-07 188
- var_yaw_forearm           1 1.0529e-06 188
<none>                        3.3466e-07 190

Step:  AIC=188
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + avg_pitch_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + max_roll_forearm +
    min_roll_forearm + min_pitch_forearm + amplitude_roll_forearm +
    total_accel_forearm + avg_roll_forearm + stddev_pitch_forearm +
    var_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df   Deviance AIC
- avg_pitch_dumbbell       1 3.3476e-07 186
- min_roll_forearm         1 3.3479e-07 186
- max_roll_forearm         1 3.3479e-07 186
- amplitude_roll_forearm   1 3.3479e-07 186
- var_total_accel_belt     1 3.3480e-07 186
- new_window               1 3.3483e-07 186
- var_roll_dumbbell        1 3.3486e-07 186
- magnet_dumbbell_z        1 3.3487e-07 186
- max_picth_dumbbell       1 3.3488e-07 186
- yaw_arm                  1 3.3488e-07 186
- amplitude_roll_dumbbell  1 3.3490e-07 186
- min_pitch_belt           1 3.3491e-07 186
- avg_roll_arm             1 3.3491e-07 186
- max_roll_belt            1 3.3492e-07 186
- stddev_yaw_arm           1 3.3494e-07 186
- stddev_pitch_belt        1 3.3495e-07 186
- amplitude_roll_belt      1 3.3496e-07 186
- skewness_pitch_dumbbell  1 3.3496e-07 186
- var_pitch_forearm        1 3.3497e-07 186
- stddev_roll_arm          1 3.3501e-07 186
```

- max_roll_dumbbell 1 3.3501e-07 186
- stddev_yaw_belt 1 3.3501e-07 186
- avg_yaw_arm 1 3.3502e-07 186
- min_pitch_dumbbell 1 3.3505e-07 186
- max_picth_arm 1 3.3507e-07 186
- avg_roll_forearm 1 3.3507e-07 186
- skewness_pitch_forearm 1 3.3508e-07 186
- gyros_belt_x 1 3.3509e-07 186
- var_yaw_belt 1 3.3510e-07 186
- var_pitch_belt 1 3.3514e-07 186
- max_yaw_arm 1 3.3522e-07 186
- skewness_roll_belt 1 3.3524e-07 186
- min_pitch_forearm 1 3.3526e-07 186
- gyros_dumbbell_x 1 3.3532e-07 186
- max_yaw_belt 1 3.3535e-07 186
- kurtosis_roll_belt 1 3.3536e-07 186
- var_accel_arm 1 3.3542e-07 186
- min_yaw_arm 1 3.3545e-07 186
- accel_belt_z 1 3.3546e-07 186
- stddev_pitch_forearm 1 3.3549e-07 186
- min_roll_arm 1 3.3585e-07 186
- kurtosis_roll_arm 1 3.3596e-07 186
- stddev_yaw_forearm 1 3.3600e-07 186
- gyros_dumbbell_z 1 3.3609e-07 186
- total_accel_arm 1 3.3617e-07 186
- magnet_belt_y 1 3.3624e-07 186
- accel_belt_x 1 3.3641e-07 186
- gyros_arm_x 1 3.3642e-07 186
- magnet_forearm_y 1 3.3645e-07 186
- gyros_forearm_x 1 3.3649e-07 186
- max_roll_arm 1 3.3654e-07 186
- var_yaw_forearm 1 3.3672e-07 186
- roll_arm 1 3.3675e-07 186
- yaw_forearm 1 3.3696e-07 186
- gyros_belt_z 1 3.3705e-07 186
- gyros_arm_y 1 3.3723e-07 186
- accel_dumbbell_z 1 3.3746e-07 186
- yaw_dumbbell 1 3.3760e-07 186
- total_accel_forearm 1 3.3775e-07 186
- magnet_arm_x 1 3.3782e-07 186
- magnet_arm_z 1 3.3795e-07 186
- roll_belt 1 3.3806e-07 186
- accel_dumbbell_y 1 3.3809e-07 186
- magnet_dumbbell_x 1 3.3866e-07 186
- gyros_arm_z 1 3.3991e-07 186
- accel_belt_y 1 3.4036e-07 186
- total_accel_dumbbell 1 3.4044e-07 186
- cvtd_timestamp 1 3.4093e-07 186
- user_name 1 3.4113e-07 186
- raw_timestamp_part_2 1 3.4221e-07 186
- total_accel_belt 1 3.4233e-07 186
- magnet_belt_x 1 3.4265e-07 186
- pitch_belt 1 3.4293e-07 186
- roll_dumbbell 1 3.4309e-07 186
- accel_dumbbell_x 1 3.4313e-07 186
- accel_forearm_x 1 3.4333e-07 186
- gyros_forearm_y 1 3.4410e-07 186

```
- accel_forearm_y          1 3.4427e-07 186
- gyros_belt_y             1 3.4448e-07 186
- accel_forearm_z          1 3.4471e-07 186
- accel_arm_x              1 3.4502e-07 186
- pitch_forearm            1 3.4518e-07 186
- pitch_dumbbell           1 3.4529e-07 186
- raw_timestamp_part_1     1 3.4668e-07 186
- magnet_belt_z            1 3.4692e-07 186
- gyros_forearm_z          1 3.4968e-07 186
- accel_arm_z              1 3.5253e-07 186
- magnet_forearm_x         1 3.5904e-07 186
- magnet_forearm_z         1 3.6710e-07 186
- magnet_arm_y             1 3.8388e-07 186
- accel_arm_y              1 3.8846e-07 186
- pitch_arm                1 4.1484e-07 186
- num_window               1 6.2179e-07 186
<none>                       3.3473e-07 188

Step:  AIC=186
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + max_roll_forearm + min_roll_forearm +
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + var_pitch_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- min_roll_forearm         1 3.3480e-07 184
- max_roll_forearm         1 3.3480e-07 184
- amplitude_roll_forearm   1 3.3480e-07 184
- var_total_accel_belt     1 3.3487e-07 184
- var_roll_dumbbell        1 3.3488e-07 184
- max_picth_dumbbell       1 3.3489e-07 184
- amplitude_roll_dumbbell  1 3.3491e-07 184
- yaw_arm                  1 3.3491e-07 184
- avg_roll_arm             1 3.3493e-07 184
- magnet_dumbbell_z        1 3.3494e-07 184
- var_pitch_forearm        1 3.3494e-07 184
```

- stddev_pitch_belt 1 3.3499e-07 184
- amplitude_roll_belt 1 3.3499e-07 184
- stddev_yaw_arm 1 3.3499e-07 184
- avg_yaw_arm 1 3.3501e-07 184
- stddev_roll_arm 1 3.3501e-07 184
- avg_roll_forearm 1 3.3503e-07 184
- stddev_yaw_belt 1 3.3504e-07 184
- new_window 1 3.3504e-07 184
- min_pitch_dumbbell 1 3.3505e-07 184
- max_picth_arm 1 3.3507e-07 184
- max_roll_belt 1 3.3508e-07 184
- var_yaw_belt 1 3.3509e-07 184
- max_roll_dumbbell 1 3.3510e-07 184
- gyros_belt_x 1 3.3512e-07 184
- skewness_pitch_forearm 1 3.3513e-07 184
- var_pitch_belt 1 3.3513e-07 184
- skewness_pitch_dumbbell 1 3.3520e-07 184
- skewness_roll_belt 1 3.3523e-07 184
- min_pitch_belt 1 3.3525e-07 184
- max_yaw_arm 1 3.3528e-07 184
- min_pitch_forearm 1 3.3530e-07 184
- gyros_dumbbell_x 1 3.3535e-07 184
- var_accel_arm 1 3.3546e-07 184
- max_yaw_belt 1 3.3547e-07 184
- accel_belt_z 1 3.3548e-07 184
- kurtosis_roll_belt 1 3.3548e-07 184
- min_yaw_arm 1 3.3573e-07 184
- min_roll_arm 1 3.3587e-07 184
- kurtosis_roll_arm 1 3.3592e-07 184
- stddev_pitch_forearm 1 3.3598e-07 184
- var_yaw_forearm 1 3.3599e-07 184
- stddev_yaw_forearm 1 3.3601e-07 184
- gyros_dumbbell_z 1 3.3615e-07 184
- total_accel_arm 1 3.3623e-07 184
- magnet_belt_y 1 3.3632e-07 184
- magnet_forearm_y 1 3.3644e-07 184
- accel_belt_x 1 3.3649e-07 184
- gyros_arm_x 1 3.3650e-07 184
- gyros_forearm_x 1 3.3652e-07 184
- max_roll_arm 1 3.3662e-07 184
- roll_arm 1 3.3676e-07 184
- yaw_forearm 1 3.3703e-07 184
- gyros_belt_z 1 3.3712e-07 184
- gyros_arm_y 1 3.3731e-07 184
- accel_dumbbell_z 1 3.3754e-07 184
- yaw_dumbbell 1 3.3777e-07 184
- total_accel_forearm 1 3.3778e-07 184
- magnet_arm_x 1 3.3789e-07 184
- magnet_arm_z 1 3.3804e-07 184
- accel_dumbbell_y 1 3.3814e-07 184
- roll_belt 1 3.3818e-07 184
- magnet_dumbbell_x 1 3.3872e-07 184
- gyros_arm_z 1 3.4003e-07 184
- accel_belt_y 1 3.4036e-07 184
- total_accel_dumbbell 1 3.4050e-07 184
- cvtd_timestamp 1 3.4098e-07 184
- user_name 1 3.4119e-07 184

```
- raw_timestamp_part_2     1 3.4238e-07 184
- total_accel_belt         1 3.4239e-07 184
- magnet_belt_x            1 3.4274e-07 184
- pitch_belt               1 3.4302e-07 184
- accel_dumbbell_x         1 3.4329e-07 184
- roll_dumbbell            1 3.4332e-07 184
- accel_forearm_x          1 3.4339e-07 184
- gyros_forearm_y          1 3.4416e-07 184
- accel_forearm_y          1 3.4430e-07 184
- gyros_belt_y             1 3.4450e-07 184
- accel_forearm_z          1 3.4473e-07 184
- accel_arm_x              1 3.4505e-07 184
- pitch_forearm            1 3.4529e-07 184
- pitch_dumbbell           1 3.4535e-07 184
- raw_timestamp_part_1     1 3.4672e-07 184
- magnet_belt_z            1 3.4696e-07 184
- gyros_forearm_z          1 3.4980e-07 184
- accel_arm_z              1 3.5273e-07 184
- magnet_forearm_x         1 3.5907e-07 184
- magnet_forearm_z         1 3.6712e-07 184
- magnet_arm_y             1 3.8420e-07 184
- accel_arm_y              1 3.8869e-07 184
- pitch_arm                1 4.1492e-07 184
- num_window               1 6.2241e-07 184
<none>                       3.3476e-07 186

Step:  AIC=184
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + max_roll_forearm + min_pitch_forearm +
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z



                           Df   Deviance AIC
```

- max_roll_forearm 1 3.3483e-07 182
- var_total_accel_belt 1 3.3486e-07 182
- var_pitch_forearm 1 3.3493e-07 182
- yaw_arm 1 3.3494e-07 182
- max_picth_dumbbell 1 3.3494e-07 182
- amplitude_roll_dumbbell 1 3.3495e-07 182
- avg_roll_arm 1 3.3496e-07 182
- var_roll_dumbbell 1 3.3496e-07 182
- magnet_dumbbell_z 1 3.3497e-07 182
- stddev_pitch_belt 1 3.3498e-07 182
- amplitude_roll_belt 1 3.3501e-07 182
- stddev_yaw_arm 1 3.3504e-07 182
- stddev_roll_arm 1 3.3504e-07 182
- avg_roll_forearm 1 3.3506e-07 182
- stddev_yaw_belt 1 3.3506e-07 182
- avg_yaw_arm 1 3.3507e-07 182
- max_roll_belt 1 3.3509e-07 182
- new_window 1 3.3510e-07 182
- max_picth_arm 1 3.3510e-07 182
- min_pitch_dumbbell 1 3.3511e-07 182
- var_yaw_belt 1 3.3512e-07 182
- var_pitch_belt 1 3.3513e-07 182
- gyros_belt_x 1 3.3515e-07 182
- skewness_pitch_forearm 1 3.3519e-07 182
- skewness_pitch_dumbbell 1 3.3522e-07 182
- skewness_roll_belt 1 3.3525e-07 182
- min_pitch_belt 1 3.3530e-07 182
- amplitude_roll_forearm 1 3.3534e-07 182
- min_pitch_forearm 1 3.3535e-07 182
- max_yaw_arm 1 3.3536e-07 182
- gyros_dumbbell_x 1 3.3540e-07 182
- max_yaw_belt 1 3.3546e-07 182
- kurtosis_roll_belt 1 3.3546e-07 182
- var_accel_arm 1 3.3552e-07 182
- accel_belt_z 1 3.3553e-07 182
- stddev_pitch_forearm 1 3.3556e-07 182
- max_roll_dumbbell 1 3.3571e-07 182
- min_yaw_arm 1 3.3575e-07 182
- kurtosis_roll_arm 1 3.3594e-07 182
- min_roll_arm 1 3.3602e-07 182
- var_yaw_forearm 1 3.3605e-07 182
- stddev_yaw_forearm 1 3.3606e-07 182
- gyros_dumbbell_z 1 3.3619e-07 182
- total_accel_arm 1 3.3624e-07 182
- magnet_belt_y 1 3.3636e-07 182
- magnet_forearm_y 1 3.3649e-07 182
- accel_belt_x 1 3.3653e-07 182
- gyros_arm_x 1 3.3653e-07 182
- gyros_forearm_x 1 3.3657e-07 182
- max_roll_arm 1 3.3661e-07 182
- roll_arm 1 3.3685e-07 182
- yaw_forearm 1 3.3710e-07 182
- gyros_belt_z 1 3.3715e-07 182
- gyros_arm_y 1 3.3735e-07 182
- accel_dumbbell_z 1 3.3758e-07 182
- yaw_dumbbell 1 3.3776e-07 182
- total_accel_forearm 1 3.3783e-07 182

```
- magnet_arm_x             1 3.3796e-07 182
- magnet_arm_z             1 3.3807e-07 182
- roll_belt                1 3.3820e-07 182
- accel_dumbbell_y         1 3.3821e-07 182
- magnet_dumbbell_x        1 3.3875e-07 182
- gyros_arm_z              1 3.4003e-07 182
- accel_belt_y             1 3.4040e-07 182
- total_accel_dumbbell     1 3.4059e-07 182
- cvtd_timestamp           1 3.4096e-07 182
- user_name                1 3.4128e-07 182
- raw_timestamp_part_2     1 3.4238e-07 182
- total_accel_belt         1 3.4248e-07 182
- magnet_belt_x            1 3.4282e-07 182
- pitch_belt               1 3.4309e-07 182
- roll_dumbbell            1 3.4342e-07 182
- accel_dumbbell_x         1 3.4344e-07 182
- accel_forearm_x          1 3.4345e-07 182
- gyros_forearm_y          1 3.4421e-07 182
- accel_forearm_y          1 3.4434e-07 182
- gyros_belt_y             1 3.4457e-07 182
- accel_forearm_z          1 3.4481e-07 182
- accel_arm_x              1 3.4505e-07 182
- pitch_forearm            1 3.4529e-07 182
- pitch_dumbbell           1 3.4547e-07 182
- raw_timestamp_part_1     1 3.4678e-07 182
- magnet_belt_z            1 3.4706e-07 182
- gyros_forearm_z          1 3.4984e-07 182
- accel_arm_z              1 3.5279e-07 182
- magnet_forearm_x         1 3.5916e-07 182
- magnet_forearm_z         1 3.6741e-07 182
- magnet_arm_y             1 3.8420e-07 182
- accel_arm_y              1 3.8879e-07 182
- pitch_arm                1 4.1498e-07 182
- num_window               1 6.2255e-07 182
<none>                       3.3480e-07 184

Step:  AIC=182
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    var_total_accel_belt + stddev_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + max_picth_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + amplitude_roll_forearm +
```

```
    total_accel_forearm + avg_roll_forearm + stddev_pitch_forearm +
    var_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df   Deviance AIC
- var_total_accel_belt     1 3.3487e-07 180
- max_picth_dumbbell       1 3.3495e-07 180
- yaw_arm                  1 3.3495e-07 180
- avg_roll_arm             1 3.3496e-07 180
- amplitude_roll_dumbbell  1 3.3497e-07 180
- var_roll_dumbbell        1 3.3498e-07 180
- var_pitch_forearm        1 3.3498e-07 180
- stddev_pitch_belt        1 3.3499e-07 180
- magnet_dumbbell_z        1 3.3499e-07 180
- amplitude_roll_belt      1 3.3502e-07 180
- stddev_roll_arm          1 3.3504e-07 180
- stddev_yaw_arm           1 3.3505e-07 180
- stddev_yaw_belt          1 3.3507e-07 180
- new_window               1 3.3509e-07 180
- max_roll_belt            1 3.3510e-07 180
- max_picth_arm            1 3.3512e-07 180
- var_yaw_belt             1 3.3512e-07 180
- avg_roll_forearm         1 3.3513e-07 180
- avg_yaw_arm              1 3.3513e-07 180
- var_pitch_belt           1 3.3514e-07 180
- min_pitch_dumbbell       1 3.3517e-07 180
- gyros_belt_x             1 3.3518e-07 180
- skewness_pitch_dumbbell  1 3.3525e-07 180
- skewness_pitch_forearm   1 3.3528e-07 180
- skewness_roll_belt       1 3.3529e-07 180
- min_pitch_belt           1 3.3529e-07 180
- max_yaw_arm              1 3.3536e-07 180
- min_pitch_forearm        1 3.3542e-07 180
- gyros_dumbbell_x         1 3.3544e-07 180
- amplitude_roll_forearm   1 3.3544e-07 180
- max_yaw_belt             1 3.3547e-07 180
- kurtosis_roll_belt       1 3.3548e-07 180
- var_accel_arm            1 3.3556e-07 180
- accel_belt_z             1 3.3556e-07 180
- stddev_pitch_forearm     1 3.3559e-07 180
- min_yaw_arm              1 3.3578e-07 180
- var_yaw_forearm          1 3.3602e-07 180
- stddev_yaw_forearm       1 3.3604e-07 180
- kurtosis_roll_arm        1 3.3605e-07 180
- gyros_dumbbell_z         1 3.3621e-07 180
- total_accel_arm          1 3.3622e-07 180
- min_roll_arm             1 3.3625e-07 180
- magnet_belt_y            1 3.3638e-07 180
- gyros_arm_x              1 3.3651e-07 180
- magnet_forearm_y         1 3.3655e-07 180
- accel_belt_x             1 3.3655e-07 180
- gyros_forearm_x          1 3.3660e-07 180
- max_roll_arm             1 3.3680e-07 180
- roll_arm                 1 3.3690e-07 180
- gyros_belt_z             1 3.3714e-07 180
```

```
- yaw_forearm              1 3.3716e-07 180
- gyros_arm_y              1 3.3735e-07 180
- accel_dumbbell_z         1 3.3760e-07 180
- yaw_dumbbell             1 3.3775e-07 180
- total_accel_forearm      1 3.3791e-07 180
- magnet_arm_x             1 3.3795e-07 180
- magnet_arm_z             1 3.3811e-07 180
- roll_belt                1 3.3818e-07 180
- accel_dumbbell_y         1 3.3821e-07 180
- magnet_dumbbell_x        1 3.3880e-07 180
- gyros_arm_z              1 3.4003e-07 180
- accel_belt_y             1 3.4042e-07 180
- total_accel_dumbbell     1 3.4061e-07 180
- cvtd_timestamp           1 3.4097e-07 180
- user_name                1 3.4124e-07 180
- raw_timestamp_part_2     1 3.4238e-07 180
- total_accel_belt         1 3.4248e-07 180
- magnet_belt_x            1 3.4279e-07 180
- max_roll_dumbbell        1 3.4306e-07 180
- pitch_belt               1 3.4307e-07 180
- roll_dumbbell            1 3.4344e-07 180
- accel_dumbbell_x         1 3.4345e-07 180
- accel_forearm_x          1 3.4349e-07 180
- gyros_forearm_y          1 3.4418e-07 180
- accel_forearm_y          1 3.4427e-07 180
- gyros_belt_y             1 3.4460e-07 180
- accel_forearm_z          1 3.4484e-07 180
- accel_arm_x              1 3.4504e-07 180
- pitch_forearm            1 3.4537e-07 180
- pitch_dumbbell           1 3.4546e-07 180
- raw_timestamp_part_1     1 3.4671e-07 180
- magnet_belt_z            1 3.4710e-07 180
- gyros_forearm_z          1 3.4984e-07 180
- accel_arm_z              1 3.5278e-07 180
- magnet_forearm_x         1 3.5914e-07 180
- magnet_forearm_z         1 3.6738e-07 180
- magnet_arm_y             1 3.8433e-07 180
- accel_arm_y              1 3.8879e-07 180
- pitch_arm                1 4.1501e-07 180
- num_window               1 6.2250e-07 180
<none>                       3.3483e-07 182

Step:  AIC=180
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + avg_yaw_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
```

```
    max_roll_dumbbell + max_picth_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + var_pitch_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                         Df   Deviance AIC
- max_picth_dumbbell      1 3.3497e-07 178
- stddev_pitch_belt       1 3.3500e-07 178
- amplitude_roll_belt     1 3.3501e-07 178
- yaw_arm                 1 3.3501e-07 178
- var_roll_dumbbell       1 3.3502e-07 178
- magnet_dumbbell_z       1 3.3505e-07 178
- amplitude_roll_dumbbell 1 3.3506e-07 178
- stddev_yaw_belt         1 3.3507e-07 178
- new_window              1 3.3509e-07 178
- avg_roll_arm            1 3.3510e-07 178
- max_roll_belt           1 3.3510e-07 178
- var_pitch_forearm       1 3.3511e-07 178
- var_pitch_belt          1 3.3512e-07 178
- stddev_roll_arm         1 3.3514e-07 178
- var_yaw_belt            1 3.3516e-07 178
- min_pitch_dumbbell      1 3.3517e-07 178
- avg_yaw_arm             1 3.3519e-07 178
- stddev_yaw_arm          1 3.3523e-07 178
- skewness_pitch_dumbbell 1 3.3525e-07 178
- avg_roll_forearm        1 3.3527e-07 178
- skewness_roll_belt      1 3.3529e-07 178
- max_picth_arm           1 3.3529e-07 178
- gyros_belt_x            1 3.3532e-07 178
- min_pitch_belt          1 3.3532e-07 178
- skewness_pitch_forearm  1 3.3534e-07 178
- max_roll_dumbbell       1 3.3542e-07 178
- max_yaw_belt            1 3.3545e-07 178
- amplitude_roll_forearm  1 3.3545e-07 178
- kurtosis_roll_belt      1 3.3546e-07 178
- gyros_dumbbell_x        1 3.3550e-07 178
- max_yaw_arm             1 3.3552e-07 178
- min_pitch_forearm       1 3.3555e-07 178
- stddev_pitch_forearm    1 3.3562e-07 178
- accel_belt_z            1 3.3566e-07 178
- var_accel_arm           1 3.3570e-07 178
- min_yaw_arm             1 3.3588e-07 178
- var_yaw_forearm         1 3.3603e-07 178
- kurtosis_roll_arm       1 3.3609e-07 178
- stddev_yaw_forearm      1 3.3609e-07 178
- gyros_dumbbell_z        1 3.3620e-07 178
- min_roll_arm            1 3.3630e-07 178
- total_accel_arm         1 3.3639e-07 178
- magnet_belt_y           1 3.3644e-07 178
- magnet_forearm_y        1 3.3655e-07 178
```

```
- gyros_arm_x              1 3.3658e-07 178
- accel_belt_x             1 3.3666e-07 178
- gyros_forearm_x          1 3.3666e-07 178
- max_roll_arm             1 3.3682e-07 178
- roll_arm                 1 3.3705e-07 178
- yaw_forearm              1 3.3728e-07 178
- gyros_belt_z             1 3.3733e-07 178
- gyros_arm_y              1 3.3747e-07 178
- accel_dumbbell_z         1 3.3774e-07 178
- yaw_dumbbell             1 3.3780e-07 178
- total_accel_forearm      1 3.3796e-07 178
- magnet_arm_x             1 3.3808e-07 178
- magnet_arm_z             1 3.3816e-07 178
- roll_belt                1 3.3821e-07 178
- accel_dumbbell_y         1 3.3838e-07 178
- magnet_dumbbell_x        1 3.3887e-07 178
- gyros_arm_z              1 3.4007e-07 178
- accel_belt_y             1 3.4051e-07 178
- total_accel_dumbbell     1 3.4066e-07 178
- cvtd_timestamp           1 3.4112e-07 178
- user_name                1 3.4131e-07 178
- raw_timestamp_part_2     1 3.4246e-07 178
- total_accel_belt         1 3.4254e-07 178
- magnet_belt_x            1 3.4307e-07 178
- pitch_belt               1 3.4327e-07 178
- accel_dumbbell_x         1 3.4351e-07 178
- roll_dumbbell            1 3.4356e-07 178
- accel_forearm_x          1 3.4372e-07 178
- accel_forearm_y          1 3.4440e-07 178
- gyros_forearm_y          1 3.4441e-07 178
- gyros_belt_y             1 3.4453e-07 178
- accel_forearm_z          1 3.4496e-07 178
- accel_arm_x              1 3.4523e-07 178
- pitch_forearm            1 3.4539e-07 178
- pitch_dumbbell           1 3.4548e-07 178
- raw_timestamp_part_1     1 3.4674e-07 178
- magnet_belt_z            1 3.4705e-07 178
- gyros_forearm_z          1 3.5019e-07 178
- accel_arm_z              1 3.5284e-07 178
- magnet_forearm_x         1 3.5938e-07 178
- magnet_forearm_z         1 3.6755e-07 178
- magnet_arm_y             1 3.8429e-07 178
- accel_arm_y              1 3.8874e-07 178
- pitch_arm                1 4.1489e-07 178
- num_window               1 6.2245e-07 178
<none>                       3.3487e-07 180

Step:  AIC=178
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + amplitude_roll_belt +
    stddev_pitch_belt + var_pitch_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + yaw_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + avg_yaw_arm +
```

```
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- amplitude_roll_belt      1 3.3505e-07 176
- yaw_arm                  1 3.3505e-07 176
- stddev_pitch_belt        1 3.3508e-07 176
- stddev_yaw_belt          1 3.3511e-07 176
- var_pitch_forearm        1 3.3512e-07 176
- var_roll_dumbbell        1 3.3514e-07 176
- magnet_dumbbell_z        1 3.3516e-07 176
- var_pitch_belt           1 3.3518e-07 176
- max_roll_belt            1 3.3518e-07 176
- avg_roll_arm             1 3.3519e-07 176
- new_window               1 3.3521e-07 176
- var_yaw_belt             1 3.3526e-07 176
- skewness_pitch_dumbbell  1 3.3527e-07 176
- avg_yaw_arm              1 3.3531e-07 176
- amplitude_roll_dumbbell  1 3.3532e-07 176
- stddev_yaw_arm           1 3.3532e-07 176
- skewness_roll_belt       1 3.3534e-07 176
- avg_roll_forearm         1 3.3535e-07 176
- stddev_roll_arm          1 3.3535e-07 176
- max_picth_arm            1 3.3535e-07 176
- gyros_belt_x             1 3.3536e-07 176
- min_pitch_belt           1 3.3540e-07 176
- skewness_pitch_forearm   1 3.3541e-07 176
- max_yaw_belt             1 3.3543e-07 176
- kurtosis_roll_belt       1 3.3544e-07 176
- min_pitch_dumbbell       1 3.3545e-07 176
- gyros_dumbbell_x         1 3.3558e-07 176
- max_roll_dumbbell        1 3.3560e-07 176
- max_yaw_arm              1 3.3565e-07 176
- amplitude_roll_forearm   1 3.3567e-07 176
- accel_belt_z             1 3.3568e-07 176
- stddev_pitch_forearm     1 3.3572e-07 176
- min_pitch_forearm        1 3.3572e-07 176
- var_accel_arm            1 3.3578e-07 176
- min_yaw_arm              1 3.3602e-07 176
- kurtosis_roll_arm        1 3.3608e-07 176
- var_yaw_forearm          1 3.3613e-07 176
- stddev_yaw_forearm       1 3.3618e-07 176
- gyros_dumbbell_z         1 3.3639e-07 176
```

```
- min_roll_arm             1 3.3641e-07 176
- total_accel_arm          1 3.3649e-07 176
- magnet_belt_y            1 3.3656e-07 176
- magnet_forearm_y         1 3.3662e-07 176
- gyros_arm_x              1 3.3672e-07 176
- gyros_forearm_x          1 3.3672e-07 176
- accel_belt_x             1 3.3681e-07 176
- roll_arm                 1 3.3706e-07 176
- max_roll_arm             1 3.3710e-07 176
- yaw_forearm              1 3.3736e-07 176
- gyros_belt_z             1 3.3737e-07 176
- gyros_arm_y              1 3.3757e-07 176
- accel_dumbbell_z         1 3.3785e-07 176
- yaw_dumbbell             1 3.3790e-07 176
- total_accel_forearm      1 3.3800e-07 176
- magnet_arm_x             1 3.3817e-07 176
- magnet_arm_z             1 3.3828e-07 176
- roll_belt                1 3.3833e-07 176
- accel_dumbbell_y         1 3.3846e-07 176
- magnet_dumbbell_x        1 3.3896e-07 176
- gyros_arm_z              1 3.4012e-07 176
- accel_belt_y             1 3.4070e-07 176
- total_accel_dumbbell     1 3.4079e-07 176
- cvtd_timestamp           1 3.4120e-07 176
- user_name                1 3.4143e-07 176
- raw_timestamp_part_2     1 3.4262e-07 176
- total_accel_belt         1 3.4267e-07 176
- magnet_belt_x            1 3.4300e-07 176
- pitch_belt               1 3.4329e-07 176
- accel_dumbbell_x         1 3.4357e-07 176
- roll_dumbbell            1 3.4366e-07 176
- accel_forearm_x          1 3.4393e-07 176
- accel_forearm_y          1 3.4446e-07 176
- gyros_forearm_y          1 3.4448e-07 176
- gyros_belt_y             1 3.4472e-07 176
- accel_forearm_z          1 3.4514e-07 176
- accel_arm_x              1 3.4527e-07 176
- pitch_forearm            1 3.4546e-07 176
- pitch_dumbbell           1 3.4558e-07 176
- raw_timestamp_part_1     1 3.4687e-07 176
- magnet_belt_z            1 3.4717e-07 176
- gyros_forearm_z          1 3.5031e-07 176
- accel_arm_z              1 3.5297e-07 176
- magnet_forearm_x         1 3.5939e-07 176
- magnet_forearm_z         1 3.6761e-07 176
- magnet_arm_y             1 3.8449e-07 176
- accel_arm_y              1 3.8885e-07 176
- pitch_arm                1 4.1511e-07 176
- num_window               1 6.2233e-07 176
<none>                       3.3497e-07 178

Step:  AIC=176
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + stddev_pitch_belt +
    var_pitch_belt + stddev_yaw_belt + var_yaw_belt + gyros_belt_x +
```

```
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + yaw_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + amplitude_roll_forearm +
    total_accel_forearm + avg_roll_forearm + stddev_pitch_forearm +
    var_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                         Df   Deviance AIC
- stddev_pitch_belt       1 3.3510e-07 174
- yaw_arm                 1 3.3516e-07 174
- var_pitch_belt          1 3.3519e-07 174
- max_roll_belt           1 3.3520e-07 174
- new_window              1 3.3522e-07 174
- avg_roll_arm            1 3.3522e-07 174
- var_roll_dumbbell       1 3.3525e-07 174
- magnet_dumbbell_z       1 3.3526e-07 174
- var_pitch_forearm       1 3.3526e-07 174
- stddev_yaw_belt         1 3.3531e-07 174
- min_pitch_dumbbell      1 3.3531e-07 174
- stddev_roll_arm         1 3.3533e-07 174
- var_yaw_belt            1 3.3534e-07 174
- stddev_yaw_arm          1 3.3536e-07 174
- avg_yaw_arm             1 3.3539e-07 174
- avg_roll_forearm        1 3.3539e-07 174
- skewness_pitch_dumbbell 1 3.3539e-07 174
- max_picth_arm           1 3.3541e-07 174
- skewness_roll_belt      1 3.3543e-07 174
- amplitude_roll_dumbbell 1 3.3543e-07 174
- min_pitch_belt          1 3.3543e-07 174
- skewness_pitch_forearm  1 3.3545e-07 174
- max_yaw_belt            1 3.3546e-07 174
- kurtosis_roll_belt      1 3.3547e-07 174
- gyros_belt_x            1 3.3548e-07 174
- max_roll_dumbbell       1 3.3560e-07 174
- gyros_dumbbell_x        1 3.3564e-07 174
- amplitude_roll_forearm  1 3.3567e-07 174
- max_yaw_arm             1 3.3568e-07 174
- stddev_pitch_forearm    1 3.3571e-07 174
- min_pitch_forearm       1 3.3576e-07 174
- var_accel_arm           1 3.3581e-07 174
- accel_belt_z            1 3.3586e-07 174
- min_yaw_arm             1 3.3608e-07 174
- var_yaw_forearm         1 3.3614e-07 174
- stddev_yaw_forearm      1 3.3620e-07 174
```

```
- kurtosis_roll_arm        1 3.3633e-07 174
- gyros_dumbbell_z         1 3.3641e-07 174
- total_accel_arm          1 3.3656e-07 174
- magnet_belt_y            1 3.3663e-07 174
- min_roll_arm             1 3.3664e-07 174
- gyros_arm_x              1 3.3667e-07 174
- magnet_forearm_y         1 3.3672e-07 174
- gyros_forearm_x          1 3.3680e-07 174
- accel_belt_x             1 3.3684e-07 174
- roll_arm                 1 3.3708e-07 174
- max_roll_arm             1 3.3715e-07 174
- gyros_belt_z             1 3.3744e-07 174
- yaw_forearm              1 3.3747e-07 174
- gyros_arm_y              1 3.3755e-07 174
- accel_dumbbell_z         1 3.3789e-07 174
- yaw_dumbbell             1 3.3801e-07 174
- total_accel_forearm      1 3.3808e-07 174
- magnet_arm_x             1 3.3819e-07 174
- magnet_arm_z             1 3.3832e-07 174
- roll_belt                1 3.3840e-07 174
- accel_dumbbell_y         1 3.3856e-07 174
- magnet_dumbbell_x        1 3.3901e-07 174
- gyros_arm_z              1 3.4039e-07 174
- accel_belt_y             1 3.4073e-07 174
- total_accel_dumbbell     1 3.4082e-07 174
- cvtd_timestamp           1 3.4126e-07 174
- user_name                1 3.4147e-07 174
- raw_timestamp_part_2     1 3.4264e-07 174
- total_accel_belt         1 3.4277e-07 174
- magnet_belt_x            1 3.4292e-07 174
- pitch_belt               1 3.4337e-07 174
- accel_dumbbell_x         1 3.4360e-07 174
- roll_dumbbell            1 3.4374e-07 174
- accel_forearm_x          1 3.4392e-07 174
- accel_forearm_y          1 3.4449e-07 174
- gyros_forearm_y          1 3.4450e-07 174
- gyros_belt_y             1 3.4475e-07 174
- accel_forearm_z          1 3.4522e-07 174
- accel_arm_x              1 3.4535e-07 174
- pitch_forearm            1 3.4549e-07 174
- pitch_dumbbell           1 3.4562e-07 174
- raw_timestamp_part_1     1 3.4686e-07 174
- magnet_belt_z            1 3.4719e-07 174
- gyros_forearm_z          1 3.5032e-07 174
- accel_arm_z              1 3.5308e-07 174
- magnet_forearm_x         1 3.5947e-07 174
- magnet_forearm_z         1 3.6758e-07 174
- magnet_arm_y             1 3.8456e-07 174
- accel_arm_y              1 3.8896e-07 174
- pitch_arm                1 4.1522e-07 174
- num_window               1 6.2250e-07 174
<none>                       3.3505e-07 176

Step:  AIC=174
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
```

```
    max_roll_belt + max_yaw_belt + min_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + yaw_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + var_pitch_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- yaw_arm                  1 3.3518e-07 172
- max_roll_belt            1 3.3520e-07 172
- var_pitch_belt           1 3.3521e-07 172
- new_window               1 3.3523e-07 172
- magnet_dumbbell_z        1 3.3530e-07 172
- stddev_yaw_belt          1 3.3531e-07 172
- var_yaw_belt             1 3.3534e-07 172
- var_pitch_forearm        1 3.3538e-07 172
- avg_roll_arm             1 3.3538e-07 172
- min_pitch_dumbbell       1 3.3538e-07 172
- stddev_yaw_arm           1 3.3539e-07 172
- avg_roll_forearm         1 3.3540e-07 172
- avg_yaw_arm              1 3.3541e-07 172
- skewness_pitch_dumbbell  1 3.3544e-07 172
- min_pitch_belt           1 3.3545e-07 172
- stddev_roll_arm          1 3.3546e-07 172
- skewness_roll_belt       1 3.3546e-07 172
- var_roll_dumbbell        1 3.3547e-07 172
- gyros_belt_x             1 3.3549e-07 172
- max_picth_arm            1 3.3550e-07 172
- amplitude_roll_dumbbell  1 3.3551e-07 172
- max_yaw_belt             1 3.3558e-07 172
- kurtosis_roll_belt       1 3.3558e-07 172
- amplitude_roll_forearm   1 3.3567e-07 172
- gyros_dumbbell_x         1 3.3572e-07 172
- skewness_pitch_forearm   1 3.3579e-07 172
- min_pitch_forearm        1 3.3581e-07 172
- stddev_pitch_forearm     1 3.3582e-07 172
- accel_belt_z             1 3.3582e-07 172
- var_accel_arm            1 3.3585e-07 172
- max_roll_dumbbell        1 3.3585e-07 172
- max_yaw_arm              1 3.3597e-07 172
- var_yaw_forearm          1 3.3619e-07 172
- stddev_yaw_forearm       1 3.3624e-07 172
```

```
- min_yaw_arm              1 3.3632e-07 172
- kurtosis_roll_arm        1 3.3633e-07 172
- gyros_dumbbell_z         1 3.3652e-07 172
- total_accel_arm          1 3.3663e-07 172
- magnet_belt_y            1 3.3670e-07 172
- magnet_forearm_y         1 3.3679e-07 172
- gyros_forearm_x          1 3.3688e-07 172
- gyros_arm_x              1 3.3688e-07 172
- accel_belt_x             1 3.3695e-07 172
- min_roll_arm             1 3.3697e-07 172
- roll_arm                 1 3.3718e-07 172
- max_roll_arm             1 3.3727e-07 172
- yaw_forearm              1 3.3753e-07 172
- gyros_belt_z             1 3.3753e-07 172
- gyros_arm_y              1 3.3770e-07 172
- accel_dumbbell_z         1 3.3797e-07 172
- yaw_dumbbell             1 3.3808e-07 172
- total_accel_forearm      1 3.3812e-07 172
- magnet_arm_x             1 3.3832e-07 172
- magnet_arm_z             1 3.3838e-07 172
- roll_belt                1 3.3847e-07 172
- accel_dumbbell_y         1 3.3860e-07 172
- magnet_dumbbell_x        1 3.3915e-07 172
- gyros_arm_z              1 3.4044e-07 172
- accel_belt_y             1 3.4082e-07 172
- total_accel_dumbbell     1 3.4104e-07 172
- cvtd_timestamp           1 3.4128e-07 172
- user_name                1 3.4155e-07 172
- raw_timestamp_part_2     1 3.4272e-07 172
- total_accel_belt         1 3.4279e-07 172
- magnet_belt_x            1 3.4317e-07 172
- pitch_belt               1 3.4344e-07 172
- accel_dumbbell_x         1 3.4378e-07 172
- roll_dumbbell            1 3.4382e-07 172
- accel_forearm_x          1 3.4412e-07 172
- accel_forearm_y          1 3.4461e-07 172
- gyros_forearm_y          1 3.4463e-07 172
- gyros_belt_y             1 3.4484e-07 172
- accel_forearm_z          1 3.4527e-07 172
- accel_arm_x              1 3.4539e-07 172
- pitch_forearm            1 3.4552e-07 172
- pitch_dumbbell           1 3.4575e-07 172
- raw_timestamp_part_1     1 3.4691e-07 172
- magnet_belt_z            1 3.4722e-07 172
- gyros_forearm_z          1 3.5052e-07 172
- accel_arm_z              1 3.5315e-07 172
- magnet_forearm_x         1 3.5954e-07 172
- magnet_forearm_z         1 3.6764e-07 172
- magnet_arm_y             1 3.8455e-07 172
- accel_arm_y              1 3.8924e-07 172
- pitch_arm                1 4.1550e-07 172
- num_window               1 6.2266e-07 172
<none>                       3.3510e-07 174

Step:  AIC=172
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
```

```
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_roll_belt + max_yaw_belt + min_pitch_belt + var_pitch_belt +
    stddev_yaw_belt + var_yaw_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + total_accel_arm + var_accel_arm + avg_roll_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    magnet_dumbbell_z + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + var_pitch_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z



                          Df   Deviance AIC
- max_roll_belt            1 3.3500e-07 170
- var_pitch_belt           1 3.3500e-07 170
- magnet_dumbbell_z        1 3.3500e-07 170
- new_window               1 3.3500e-07 170
- stddev_yaw_belt          1 3.3500e-07 170
- var_yaw_belt             1 3.3500e-07 170
- min_pitch_dumbbell       1 3.3500e-07 170
- var_pitch_forearm        1 3.3600e-07 170
- avg_roll_arm             1 3.3600e-07 170
- skewness_roll_belt       1 3.3600e-07 170
- skewness_pitch_dumbbell  1 3.3600e-07 170
- avg_yaw_arm              1 3.3600e-07 170
- stddev_yaw_arm           1 3.3600e-07 170
- avg_roll_forearm         1 3.3600e-07 170
- accel_belt_z             1 3.3600e-07 170
- var_roll_dumbbell        1 3.3600e-07 170
- gyros_belt_x             1 3.3600e-07 170
- stddev_roll_arm          1 3.3600e-07 170
- min_pitch_belt           1 3.3600e-07 170
- max_yaw_belt             1 3.3600e-07 170
- kurtosis_roll_belt       1 3.3600e-07 170
- amplitude_roll_dumbbell  1 3.3600e-07 170
- gyros_dumbbell_x         1 3.3600e-07 170
- amplitude_roll_forearm   1 3.3600e-07 170
- skewness_pitch_forearm   1 3.3600e-07 170
- min_pitch_forearm        1 3.3600e-07 170
- stddev_pitch_forearm     1 3.3600e-07 170
- max_roll_dumbbell        1 3.3600e-07 170
- var_accel_arm            1 3.3600e-07 170
- max_yaw_arm              1 3.3600e-07 170
```

```
- gyros_dumbbell_z         1 3.3600e-07 170
- var_yaw_forearm          1 3.3600e-07 170
- total_accel_arm          1 3.3600e-07 170
- min_yaw_arm              1 3.3600e-07 170
- kurtosis_roll_arm        1 3.3600e-07 170
- magnet_forearm_y         1 3.3700e-07 170
- magnet_belt_y            1 3.3700e-07 170
- gyros_forearm_x          1 3.3700e-07 170
- min_roll_arm             1 3.3700e-07 170
- gyros_arm_x              1 3.3700e-07 170
- yaw_forearm              1 3.3700e-07 170
- max_roll_arm             1 3.3700e-07 170
- accel_belt_x             1 3.3800e-07 170
- roll_arm                 1 3.3800e-07 170
- magnet_arm_x             1 3.3800e-07 170
- total_accel_forearm      1 3.3800e-07 170
- gyros_belt_z             1 3.3800e-07 170
- magnet_arm_z             1 3.3800e-07 170
- gyros_arm_y              1 3.3900e-07 170
- accel_dumbbell_y         1 3.3900e-07 170
- roll_belt                1 3.3900e-07 170
- accel_dumbbell_z         1 3.3900e-07 170
- yaw_dumbbell             1 3.4000e-07 170
- gyros_arm_z              1 3.4000e-07 170
- cvtd_timestamp           1 3.4100e-07 170
- user_name                1 3.4100e-07 170
- accel_belt_y             1 3.4100e-07 170
- total_accel_belt         1 3.4200e-07 170
- magnet_belt_x            1 3.4300e-07 170
- roll_dumbbell            1 3.4300e-07 170
- pitch_belt               1 3.4300e-07 170
- magnet_dumbbell_x        1 3.4300e-07 170
- total_accel_dumbbell     1 3.4300e-07 170
- accel_forearm_x          1 3.4400e-07 170
- accel_forearm_z          1 3.4400e-07 170
- gyros_belt_y             1 3.4400e-07 170
- raw_timestamp_part_2     1 3.4500e-07 170
- accel_arm_x              1 3.4500e-07 170
- pitch_forearm            1 3.4500e-07 170
- accel_forearm_y          1 3.4500e-07 170
- gyros_forearm_y          1 3.4500e-07 170
- raw_timestamp_part_1     1 3.4600e-07 170
- accel_dumbbell_x         1 3.4700e-07 170
- pitch_dumbbell           1 3.4700e-07 170
- magnet_belt_z            1 3.4800e-07 170
- gyros_forearm_z          1 3.5000e-07 170
- stddev_yaw_forearm       1 3.5300e-07 170
- accel_arm_z              1 3.5400e-07 170
- magnet_forearm_x         1 3.5800e-07 170
- magnet_forearm_z         1 3.6700e-07 170
- magnet_arm_y             1 3.8500e-07 170
- accel_arm_y              1 3.9200e-07 170
- pitch_arm                1 4.1600e-07 170
- num_window               1 1.3160e-06 170
- max_picth_arm            1 4.5612e-05 170
<none>                       3.3500e-07 172
```

```
Step:  AIC=170
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + new_window + num_window + roll_belt + pitch_belt +
    total_accel_belt + kurtosis_roll_belt + skewness_roll_belt +
    max_yaw_belt + min_pitch_belt + var_pitch_belt + stddev_yaw_belt +
    var_yaw_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + avg_yaw_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z



                          Df   Deviance AIC
- new_window               1 3.3540e-07 168
- stddev_yaw_belt          1 3.3545e-07 168
- var_yaw_belt             1 3.3547e-07 168
- magnet_dumbbell_z        1 3.3552e-07 168
- avg_roll_arm             1 3.3553e-07 168
- var_pitch_forearm        1 3.3557e-07 168
- var_pitch_belt           1 3.3558e-07 168
- avg_roll_forearm         1 3.3559e-07 168
- avg_yaw_arm              1 3.3559e-07 168
- stddev_yaw_arm           1 3.3562e-07 168
- skewness_roll_belt       1 3.3562e-07 168
- var_roll_dumbbell        1 3.3562e-07 168
- stddev_roll_arm          1 3.3562e-07 168
- max_picth_arm            1 3.3564e-07 168
- accel_belt_z             1 3.3565e-07 168
- skewness_pitch_dumbbell  1 3.3566e-07 168
- amplitude_roll_dumbbell  1 3.3567e-07 168
- max_yaw_belt             1 3.3569e-07 168
- min_pitch_belt           1 3.3569e-07 168
- kurtosis_roll_belt       1 3.3570e-07 168
- gyros_belt_x             1 3.3573e-07 168
- min_pitch_dumbbell       1 3.3577e-07 168
- amplitude_roll_forearm   1 3.3586e-07 168
- skewness_pitch_forearm   1 3.3589e-07 168
```

- max_roll_dumbbell 1 3.3593e-07 168
- min_pitch_forearm 1 3.3594e-07 168
- stddev_pitch_forearm 1 3.3596e-07 168
- gyros_dumbbell_x 1 3.3597e-07 168
- var_accel_arm 1 3.3602e-07 168
- gyros_dumbbell_z 1 3.3622e-07 168
- max_yaw_arm 1 3.3623e-07 168
- var_yaw_forearm 1 3.3632e-07 168
- stddev_yaw_forearm 1 3.3640e-07 168
- total_accel_arm 1 3.3641e-07 168
- kurtosis_roll_arm 1 3.3644e-07 168
- min_yaw_arm 1 3.3663e-07 168
- magnet_forearm_y 1 3.3682e-07 168
- magnet_belt_y 1 3.3701e-07 168
- gyros_forearm_x 1 3.3704e-07 168
- min_roll_arm 1 3.3704e-07 168
- gyros_arm_x 1 3.3715e-07 168
- yaw_forearm 1 3.3723e-07 168
- max_roll_arm 1 3.3735e-07 168
- accel_belt_x 1 3.3764e-07 168
- magnet_arm_x 1 3.3806e-07 168
- roll_arm 1 3.3811e-07 168
- gyros_belt_z 1 3.3826e-07 168
- total_accel_forearm 1 3.3827e-07 168
- magnet_arm_z 1 3.3851e-07 168
- gyros_arm_y 1 3.3861e-07 168
- accel_dumbbell_y 1 3.3872e-07 168
- accel_dumbbell_z 1 3.3878e-07 168
- roll_belt 1 3.3892e-07 168
- yaw_dumbbell 1 3.3982e-07 168
- gyros_arm_z 1 3.4009e-07 168
- cvtd_timestamp 1 3.4076e-07 168
- user_name 1 3.4084e-07 168
- accel_belt_y 1 3.4102e-07 168
- total_accel_belt 1 3.4204e-07 168
- magnet_belt_x 1 3.4266e-07 168
- roll_dumbbell 1 3.4285e-07 168
- pitch_belt 1 3.4295e-07 168
- magnet_dumbbell_x 1 3.4345e-07 168
- total_accel_dumbbell 1 3.4352e-07 168
- accel_forearm_x 1 3.4364e-07 168
- accel_forearm_z 1 3.4414e-07 168
- gyros_belt_y 1 3.4444e-07 168
- raw_timestamp_part_2 1 3.4469e-07 168
- accel_arm_x 1 3.4473e-07 168
- pitch_forearm 1 3.4488e-07 168
- gyros_forearm_y 1 3.4502e-07 168
- accel_forearm_y 1 3.4507e-07 168
- raw_timestamp_part_1 1 3.4607e-07 168
- accel_dumbbell_x 1 3.4676e-07 168
- pitch_dumbbell 1 3.4684e-07 168
- magnet_belt_z 1 3.4812e-07 168
- gyros_forearm_z 1 3.5031e-07 168
- accel_arm_z 1 3.5449e-07 168
- magnet_forearm_x 1 3.5752e-07 168
- magnet_forearm_z 1 3.6662e-07 168
- magnet_arm_y 1 3.8446e-07 168

```
- accel_arm_y              1 3.9190e-07 168
- pitch_arm                1 4.1616e-07 168
- num_window               1 1.1121e-06 168
<none>                       3.3534e-07 170

Step:  AIC=168
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + skewness_roll_belt + max_yaw_belt +
    min_pitch_belt + var_pitch_belt + stddev_yaw_belt + var_yaw_belt +
    gyros_belt_x + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    var_accel_arm + avg_roll_arm + stddev_roll_arm + avg_yaw_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + magnet_dumbbell_z +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + var_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df Deviance    AIC
- stddev_yaw_belt          1     0.00 166.00
- var_yaw_belt             1     0.00 166.00
- avg_roll_arm             1     0.00 166.00
- var_pitch_forearm        1     0.00 166.00
- skewness_roll_belt       1     0.00 166.00
- var_pitch_belt           1     0.00 166.00
- magnet_dumbbell_z        1     0.00 166.00
- var_roll_dumbbell        1     0.00 166.00
- stddev_roll_arm          1     0.00 166.00
- avg_roll_forearm         1     0.00 166.00
- skewness_pitch_dumbbell  1     0.00 166.00
- max_yaw_belt             1     0.00 166.00
- amplitude_roll_dumbbell  1     0.00 166.00
- kurtosis_roll_belt       1     0.00 166.00
- avg_yaw_arm              1     0.00 166.00
- accel_belt_z             1     0.00 166.00
- stddev_yaw_arm           1     0.00 166.00
- min_pitch_belt           1     0.00 166.00
- gyros_belt_x             1     0.00 166.00
- max_picth_arm            1     0.00 166.00
- skewness_pitch_forearm   1     0.00 166.00
- min_pitch_dumbbell       1     0.00 166.00
- amplitude_roll_forearm   1     0.00 166.00
- max_roll_dumbbell        1     0.00 166.00
- stddev_pitch_forearm     1     0.00 166.00
```

- min_pitch_forearm 1 0.00 166.00
- gyros_dumbbell_x 1 0.00 166.00
- var_accel_arm 1 0.00 166.00
- max_yaw_arm 1 0.00 166.00
- var_yaw_forearm 1 0.00 166.00
- gyros_dumbbell_z 1 0.00 166.00
- stddev_yaw_forearm 1 0.00 166.00
- total_accel_arm 1 0.00 166.00
- kurtosis_roll_arm 1 0.00 166.00
- min_yaw_arm 1 0.00 166.00
- magnet_forearm_y 1 0.00 166.00
- gyros_forearm_x 1 0.00 166.00
- min_roll_arm 1 0.00 166.00
- magnet_belt_y 1 0.00 166.00
- gyros_arm_x 1 0.00 166.00
- yaw_forearm 1 0.00 166.00
- max_roll_arm 1 0.00 166.00
- accel_belt_x 1 0.00 166.00
- roll_arm 1 0.00 166.00
- magnet_arm_x 1 0.00 166.00
- gyros_belt_z 1 0.00 166.00
- total_accel_forearm 1 0.00 166.00
- magnet_arm_z 1 0.00 166.00
- gyros_arm_y 1 0.00 166.00
- accel_dumbbell_y 1 0.00 166.00
- accel_dumbbell_z 1 0.00 166.00
- roll_belt 1 0.00 166.00
- yaw_dumbbell 1 0.00 166.00
- gyros_arm_z 1 0.00 166.00
- cvtd_timestamp 1 0.00 166.00
- user_name 1 0.00 166.00
- accel_belt_y 1 0.00 166.00
- total_accel_belt 1 0.00 166.00
- magnet_belt_x 1 0.00 166.00
- roll_dumbbell 1 0.00 166.00
- pitch_belt 1 0.00 166.00
- magnet_dumbbell_x 1 0.00 166.00
- total_accel_dumbbell 1 0.00 166.00
- accel_forearm_x 1 0.00 166.00
- accel_forearm_z 1 0.00 166.00
- gyros_belt_y 1 0.00 166.00
- accel_arm_x 1 0.00 166.00
- raw_timestamp_part_2 1 0.00 166.00
- pitch_forearm 1 0.00 166.00
- gyros_forearm_y 1 0.00 166.00
- accel_forearm_y 1 0.00 166.00
- raw_timestamp_part_1 1 0.00 166.00
- accel_dumbbell_x 1 0.00 166.00
- pitch_dumbbell 1 0.00 166.00
- magnet_belt_z 1 0.00 166.00
- gyros_forearm_z 1 0.00 166.00
- accel_arm_z 1 0.00 166.00
- magnet_forearm_x 1 0.00 166.00
- magnet_forearm_z 1 0.00 166.00
- magnet_arm_y 1 0.00 166.00
- accel_arm_y 1 0.00 166.00
- pitch_arm 1 0.00 166.00

```
<none>                          0.00 168.00
- num_window               1   648.79 814.79

Step:  AIC=166
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + skewness_roll_belt + max_yaw_belt +
    min_pitch_belt + var_pitch_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + magnet_dumbbell_z + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + amplitude_roll_forearm +
    total_accel_forearm + avg_roll_forearm + stddev_pitch_forearm +
    var_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df   Deviance AIC
- magnet_dumbbell_z        1 3.3560e-07 164
- avg_roll_arm             1 3.3561e-07 164
- var_pitch_forearm        1 3.3561e-07 164
- skewness_pitch_dumbbell  1 3.3571e-07 164
- stddev_roll_arm          1 3.3572e-07 164
- avg_roll_forearm         1 3.3573e-07 164
- max_yaw_belt             1 3.3574e-07 164
- kurtosis_roll_belt       1 3.3574e-07 164
- skewness_pitch_forearm   1 3.3576e-07 164
- var_yaw_belt             1 3.3576e-07 164
- accel_belt_z             1 3.3576e-07 164
- skewness_roll_belt       1 3.3577e-07 164
- min_pitch_belt           1 3.3577e-07 164
- var_roll_dumbbell        1 3.3578e-07 164
- gyros_belt_x             1 3.3579e-07 164
- avg_yaw_arm              1 3.3580e-07 164
- amplitude_roll_forearm   1 3.3581e-07 164
- var_pitch_belt           1 3.3584e-07 164
- stddev_yaw_arm           1 3.3587e-07 164
- max_picth_arm            1 3.3590e-07 164
- amplitude_roll_dumbbell  1 3.3593e-07 164
- min_pitch_dumbbell       1 3.3598e-07 164
- gyros_dumbbell_x         1 3.3604e-07 164
- max_roll_dumbbell        1 3.3604e-07 164
- stddev_pitch_forearm     1 3.3604e-07 164
- var_accel_arm            1 3.3607e-07 164
- min_pitch_forearm        1 3.3611e-07 164
- max_yaw_arm              1 3.3631e-07 164
```

```
- var_yaw_forearm          1 3.3634e-07 164
- gyros_dumbbell_z         1 3.3640e-07 164
- stddev_yaw_forearm       1 3.3641e-07 164
- kurtosis_roll_arm        1 3.3645e-07 164
- total_accel_arm          1 3.3652e-07 164
- min_yaw_arm              1 3.3665e-07 164
- magnet_forearm_y         1 3.3684e-07 164
- gyros_forearm_x          1 3.3711e-07 164
- min_roll_arm             1 3.3712e-07 164
- magnet_belt_y            1 3.3718e-07 164
- gyros_arm_x              1 3.3727e-07 164
- yaw_forearm              1 3.3734e-07 164
- max_roll_arm             1 3.3744e-07 164
- accel_belt_x             1 3.3780e-07 164
- roll_arm                 1 3.3816e-07 164
- magnet_arm_x             1 3.3826e-07 164
- total_accel_forearm      1 3.3836e-07 164
- gyros_belt_z             1 3.3837e-07 164
- magnet_arm_z             1 3.3863e-07 164
- gyros_arm_y              1 3.3869e-07 164
- accel_dumbbell_y         1 3.3887e-07 164
- accel_dumbbell_z         1 3.3894e-07 164
- roll_belt                1 3.3902e-07 164
- yaw_dumbbell             1 3.3994e-07 164
- gyros_arm_z              1 3.4003e-07 164
- cvtd_timestamp           1 3.4097e-07 164
- accel_belt_y             1 3.4104e-07 164
- user_name                1 3.4109e-07 164
- total_accel_belt         1 3.4194e-07 164
- magnet_belt_x            1 3.4284e-07 164
- roll_dumbbell            1 3.4300e-07 164
- pitch_belt               1 3.4326e-07 164
- total_accel_dumbbell     1 3.4350e-07 164
- magnet_dumbbell_x        1 3.4351e-07 164
- accel_forearm_x          1 3.4379e-07 164
- accel_forearm_z          1 3.4418e-07 164
- gyros_belt_y             1 3.4442e-07 164
- raw_timestamp_part_2     1 3.4481e-07 164
- accel_arm_x              1 3.4487e-07 164
- pitch_forearm            1 3.4491e-07 164
- gyros_forearm_y          1 3.4510e-07 164
- accel_forearm_y          1 3.4519e-07 164
- raw_timestamp_part_1     1 3.4630e-07 164
- accel_dumbbell_x         1 3.4689e-07 164
- pitch_dumbbell           1 3.4701e-07 164
- magnet_belt_z            1 3.4829e-07 164
- gyros_forearm_z          1 3.5035e-07 164
- accel_arm_z              1 3.5458e-07 164
- magnet_forearm_x         1 3.5767e-07 164
- magnet_forearm_z         1 3.6661e-07 164
- magnet_arm_y             1 3.8469e-07 164
- accel_arm_y              1 3.9211e-07 164
- pitch_arm                1 4.1633e-07 164
- num_window               1 1.5399e-06 164
<none>                       3.3541e-07 166

Step:  AIC=164
```

```
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + skewness_roll_belt + max_yaw_belt +
    min_pitch_belt + var_pitch_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + var_pitch_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- var_pitch_forearm        1 3.3580e-07 162
- avg_roll_arm             1 3.3580e-07 162
- skewness_pitch_dumbbell  1 3.3589e-07 162
- avg_roll_forearm         1 3.3591e-07 162
- stddev_roll_arm          1 3.3592e-07 162
- max_yaw_belt             1 3.3592e-07 162
- skewness_pitch_forearm   1 3.3592e-07 162
- var_yaw_belt             1 3.3592e-07 162
- kurtosis_roll_belt       1 3.3592e-07 162
- skewness_roll_belt       1 3.3594e-07 162
- gyros_belt_x             1 3.3595e-07 162
- var_roll_dumbbell        1 3.3596e-07 162
- min_pitch_belt           1 3.3597e-07 162
- avg_yaw_arm              1 3.3597e-07 162
- accel_belt_z             1 3.3601e-07 162
- var_pitch_belt           1 3.3601e-07 162
- amplitude_roll_forearm   1 3.3601e-07 162
- stddev_yaw_arm           1 3.3603e-07 162
- max_picth_arm            1 3.3607e-07 162
- amplitude_roll_dumbbell  1 3.3612e-07 162
- gyros_dumbbell_x         1 3.3616e-07 162
- max_roll_dumbbell        1 3.3622e-07 162
- stddev_pitch_forearm     1 3.3622e-07 162
- var_accel_arm            1 3.3629e-07 162
- min_pitch_forearm        1 3.3632e-07 162
- max_yaw_arm              1 3.3645e-07 162
- var_yaw_forearm          1 3.3650e-07 162
- stddev_yaw_forearm       1 3.3656e-07 162
- kurtosis_roll_arm        1 3.3662e-07 162
- gyros_dumbbell_z         1 3.3667e-07 162
- total_accel_arm          1 3.3676e-07 162
- min_yaw_arm              1 3.3679e-07 162
```

```
- gyros_forearm_x          1 3.3723e-07 162
- min_roll_arm             1 3.3728e-07 162
- magnet_forearm_y         1 3.3734e-07 162
- magnet_belt_y            1 3.3740e-07 162
- max_roll_arm             1 3.3758e-07 162
- gyros_arm_x              1 3.3765e-07 162
- yaw_forearm              1 3.3766e-07 162
- accel_belt_x             1 3.3804e-07 162
- min_pitch_dumbbell       1 3.3806e-07 162
- magnet_arm_x             1 3.3854e-07 162
- gyros_belt_z             1 3.3858e-07 162
- total_accel_forearm      1 3.3877e-07 162
- roll_belt                1 3.3914e-07 162
- roll_arm                 1 3.3921e-07 162
- accel_dumbbell_y         1 3.3926e-07 162
- gyros_arm_y              1 3.3928e-07 162
- magnet_arm_z             1 3.3975e-07 162
- gyros_arm_z              1 3.4034e-07 162
- yaw_dumbbell             1 3.4040e-07 162
- cvtd_timestamp           1 3.4052e-07 162
- accel_dumbbell_z         1 3.4098e-07 162
- accel_belt_y             1 3.4160e-07 162
- user_name                1 3.4177e-07 162
- total_accel_belt         1 3.4203e-07 162
- magnet_belt_x            1 3.4310e-07 162
- magnet_dumbbell_x        1 3.4342e-07 162
- pitch_belt               1 3.4393e-07 162
- accel_forearm_x          1 3.4455e-07 162
- accel_forearm_z          1 3.4463e-07 162
- roll_dumbbell            1 3.4474e-07 162
- gyros_belt_y             1 3.4474e-07 162
- accel_forearm_y          1 3.4525e-07 162
- raw_timestamp_part_2     1 3.4535e-07 162
- accel_arm_x              1 3.4550e-07 162
- pitch_forearm            1 3.4577e-07 162
- total_accel_dumbbell     1 3.4595e-07 162
- gyros_forearm_y          1 3.4598e-07 162
- accel_dumbbell_x         1 3.4749e-07 162
- raw_timestamp_part_1     1 3.4801e-07 162
- pitch_dumbbell           1 3.4830e-07 162
- magnet_belt_z            1 3.4888e-07 162
- gyros_forearm_z          1 3.5080e-07 162
- accel_arm_z              1 3.5651e-07 162
- magnet_forearm_x         1 3.5728e-07 162
- magnet_forearm_z         1 3.6609e-07 162
- magnet_arm_y             1 3.8505e-07 162
- accel_arm_y              1 3.9563e-07 162
- pitch_arm                1 4.1713e-07 162
- num_window               1 1.1337e-06 162
<none>                       3.3560e-07 164

Step:  AIC=162
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + skewness_roll_belt + max_yaw_belt +
    min_pitch_belt + var_pitch_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
```

```
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + var_accel_arm +
    avg_roll_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- avg_roll_arm             1 3.3594e-07 160
- var_yaw_belt             1 3.3599e-07 160
- skewness_roll_belt       1 3.3600e-07 160
- var_roll_dumbbell        1 3.3601e-07 160
- min_pitch_belt           1 3.3601e-07 160
- skewness_pitch_dumbbell  1 3.3605e-07 160
- var_pitch_belt           1 3.3606e-07 160
- amplitude_roll_dumbbell  1 3.3611e-07 160
- avg_roll_forearm         1 3.3612e-07 160
- max_yaw_belt             1 3.3613e-07 160
- kurtosis_roll_belt       1 3.3614e-07 160
- gyros_belt_x             1 3.3615e-07 160
- amplitude_roll_forearm   1 3.3616e-07 160
- stddev_roll_arm          1 3.3619e-07 160
- max_roll_dumbbell        1 3.3619e-07 160
- stddev_yaw_arm           1 3.3622e-07 160
- stddev_pitch_forearm     1 3.3622e-07 160
- accel_belt_z             1 3.3623e-07 160
- var_accel_arm            1 3.3624e-07 160
- max_picth_arm            1 3.3630e-07 160
- skewness_pitch_forearm   1 3.3632e-07 160
- min_pitch_forearm        1 3.3632e-07 160
- gyros_dumbbell_x         1 3.3633e-07 160
- avg_yaw_arm              1 3.3635e-07 160
- min_pitch_dumbbell       1 3.3637e-07 160
- max_yaw_arm              1 3.3641e-07 160
- var_yaw_forearm          1 3.3654e-07 160
- stddev_yaw_forearm       1 3.3668e-07 160
- min_yaw_arm              1 3.3675e-07 160
- gyros_dumbbell_z         1 3.3682e-07 160
- kurtosis_roll_arm        1 3.3696e-07 160
- total_accel_arm          1 3.3699e-07 160
- min_roll_arm             1 3.3732e-07 160
- gyros_forearm_x          1 3.3752e-07 160
- magnet_forearm_y         1 3.3755e-07 160
- magnet_belt_y            1 3.3764e-07 160
- max_roll_arm             1 3.3778e-07 160
```

```
- gyros_arm_x              1 3.3786e-07 160
- yaw_forearm              1 3.3800e-07 160
- accel_belt_x             1 3.3818e-07 160
- magnet_arm_x             1 3.3862e-07 160
- gyros_belt_z             1 3.3881e-07 160
- total_accel_forearm      1 3.3901e-07 160
- roll_belt                1 3.3939e-07 160
- accel_dumbbell_y         1 3.3941e-07 160
- roll_arm                 1 3.3942e-07 160
- gyros_arm_y              1 3.3946e-07 160
- magnet_arm_z             1 3.4008e-07 160
- yaw_dumbbell             1 3.4051e-07 160
- cvtd_timestamp           1 3.4066e-07 160
- gyros_arm_z              1 3.4068e-07 160
- accel_dumbbell_z         1 3.4115e-07 160
- accel_belt_y             1 3.4183e-07 160
- user_name                1 3.4192e-07 160
- total_accel_belt         1 3.4230e-07 160
- magnet_belt_x            1 3.4323e-07 160
- magnet_dumbbell_x        1 3.4373e-07 160
- pitch_belt               1 3.4408e-07 160
- accel_forearm_z          1 3.4469e-07 160
- accel_forearm_x          1 3.4477e-07 160
- gyros_belt_y             1 3.4504e-07 160
- roll_dumbbell            1 3.4507e-07 160
- accel_arm_x              1 3.4556e-07 160
- raw_timestamp_part_2     1 3.4557e-07 160
- accel_forearm_y          1 3.4560e-07 160
- pitch_forearm            1 3.4601e-07 160
- gyros_forearm_y          1 3.4616e-07 160
- total_accel_dumbbell     1 3.4624e-07 160
- accel_dumbbell_x         1 3.4783e-07 160
- raw_timestamp_part_1     1 3.4807e-07 160
- pitch_dumbbell           1 3.4867e-07 160
- magnet_belt_z            1 3.4903e-07 160
- gyros_forearm_z          1 3.5088e-07 160
- accel_arm_z              1 3.5689e-07 160
- magnet_forearm_x         1 3.5745e-07 160
- magnet_forearm_z         1 3.6649e-07 160
- magnet_arm_y             1 3.8562e-07 160
- accel_arm_y              1 3.9609e-07 160
- pitch_arm                1 4.1734e-07 160
- num_window               1 1.1586e-06 160
<none>                       3.3580e-07 162

Step:  AIC=160
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + skewness_roll_belt + max_yaw_belt +
    min_pitch_belt + var_pitch_belt + var_yaw_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + var_accel_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
```

```
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z



                          Df   Deviance AIC
- var_pitch_belt           1 3.3615e-07 156
- skewness_roll_belt       1 3.3620e-07 156
- var_roll_dumbbell        1 3.3625e-07 156
- amplitude_roll_dumbbell  1 3.3635e-07 156
- min_pitch_belt           1 3.3635e-07 156
- gyros_belt_x             1 3.3637e-07 156
- stddev_roll_arm          1 3.3638e-07 156
- avg_roll_forearm         1 3.3639e-07 156
- max_yaw_belt             1 3.3640e-07 156
- kurtosis_roll_belt       1 3.3640e-07 156
- accel_belt_z             1 3.3643e-07 156
- stddev_pitch_forearm     1 3.3645e-07 156
- amplitude_roll_forearm   1 3.3645e-07 156
- max_roll_dumbbell        1 3.3648e-07 156
- skewness_pitch_dumbbell  1 3.3649e-07 156
- max_picth_arm            1 3.3652e-07 156
- var_accel_arm            1 3.3652e-07 156
- skewness_pitch_forearm   1 3.3656e-07 156
- gyros_dumbbell_x         1 3.3660e-07 156
- max_yaw_arm              1 3.3660e-07 156
- stddev_yaw_arm           1 3.3662e-07 156
- avg_yaw_arm              1 3.3666e-07 156
- min_pitch_dumbbell       1 3.3666e-07 156
- min_pitch_forearm        1 3.3666e-07 156
- var_yaw_forearm          1 3.3697e-07 156
- min_yaw_arm              1 3.3698e-07 156
- gyros_dumbbell_z         1 3.3704e-07 156
- kurtosis_roll_arm        1 3.3715e-07 156
- stddev_yaw_forearm       1 3.3718e-07 156
- total_accel_arm          1 3.3722e-07 156
- min_roll_arm             1 3.3735e-07 156
- gyros_forearm_x          1 3.3778e-07 156
- magnet_forearm_y         1 3.3784e-07 156
- max_roll_arm             1 3.3784e-07 156
- magnet_belt_y            1 3.3790e-07 156
- yaw_forearm              1 3.3807e-07 156
- gyros_arm_x              1 3.3816e-07 156
- accel_belt_x             1 3.3845e-07 156
- magnet_arm_x             1 3.3888e-07 156
- gyros_belt_z             1 3.3908e-07 156
```

```
- total_accel_forearm      1 3.3930e-07 156
- roll_belt                1 3.3960e-07 156
- roll_arm                 1 3.3965e-07 156
- accel_dumbbell_y         1 3.3970e-07 156
- gyros_arm_y              1 3.3970e-07 156
- magnet_arm_z             1 3.4027e-07 156
- yaw_dumbbell             1 3.4080e-07 156
- gyros_arm_z              1 3.4095e-07 156
- cvtd_timestamp           1 3.4095e-07 156
- accel_dumbbell_z         1 3.4147e-07 156
- accel_belt_y             1 3.4202e-07 156
- user_name                1 3.4213e-07 156
- total_accel_belt         1 3.4252e-07 156
- magnet_belt_x            1 3.4352e-07 156
- magnet_dumbbell_x        1 3.4395e-07 156
- pitch_belt               1 3.4435e-07 156
- accel_forearm_x          1 3.4486e-07 156
- roll_dumbbell            1 3.4530e-07 156
- accel_forearm_z          1 3.4540e-07 156
- gyros_belt_y             1 3.4541e-07 156
- raw_timestamp_part_2     1 3.4585e-07 156
- accel_forearm_y          1 3.4586e-07 156
- accel_arm_x              1 3.4589e-07 156
- pitch_forearm            1 3.4624e-07 156
- gyros_forearm_y          1 3.4629e-07 156
- total_accel_dumbbell     1 3.4646e-07 156
- accel_dumbbell_x         1 3.4790e-07 156
- raw_timestamp_part_1     1 3.4831e-07 156
- pitch_dumbbell           1 3.4878e-07 156
- magnet_belt_z            1 3.4924e-07 156
- gyros_forearm_z          1 3.5119e-07 156
- accel_arm_z              1 3.5724e-07 156
- magnet_forearm_x         1 3.5745e-07 156
- magnet_forearm_z         1 3.6670e-07 156
- magnet_arm_y             1 3.8594e-07 156
- accel_arm_y              1 3.9622e-07 156
- pitch_arm                1 4.1777e-07 156
- num_window               1 1.1375e-06 156
<none>                       3.3605e-07 158

Step:  AIC=156
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + skewness_roll_belt + max_yaw_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    var_accel_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
```

```
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    avg_roll_forearm + stddev_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z



                          Df   Deviance AIC
- skewness_roll_belt       1 3.3627e-07 154
- var_roll_dumbbell        1 3.3630e-07 154
- min_pitch_belt           1 3.3637e-07 154
- amplitude_roll_dumbbell  1 3.3639e-07 154
- stddev_roll_arm          1 3.3645e-07 154
- avg_roll_forearm         1 3.3645e-07 154
- gyros_belt_x             1 3.3648e-07 154
- max_yaw_belt             1 3.3650e-07 154
- kurtosis_roll_belt       1 3.3651e-07 154
- max_roll_dumbbell        1 3.3651e-07 154
- stddev_pitch_forearm     1 3.3652e-07 154
- amplitude_roll_forearm   1 3.3653e-07 154
- accel_belt_z             1 3.3654e-07 154
- max_picth_arm            1 3.3655e-07 154
- skewness_pitch_forearm   1 3.3659e-07 154
- skewness_pitch_dumbbell  1 3.3664e-07 154
- var_accel_arm            1 3.3665e-07 154
- stddev_yaw_arm           1 3.3667e-07 154
- max_yaw_arm              1 3.3670e-07 154
- avg_yaw_arm              1 3.3673e-07 154
- gyros_dumbbell_x         1 3.3673e-07 154
- min_pitch_forearm        1 3.3675e-07 154
- var_yaw_forearm          1 3.3698e-07 154
- min_pitch_dumbbell       1 3.3700e-07 154
- min_yaw_arm              1 3.3705e-07 154
- gyros_dumbbell_z         1 3.3707e-07 154
- stddev_yaw_forearm       1 3.3719e-07 154
- total_accel_arm          1 3.3725e-07 154
- kurtosis_roll_arm        1 3.3729e-07 154
- min_roll_arm             1 3.3736e-07 154
- max_roll_arm             1 3.3781e-07 154
- magnet_forearm_y         1 3.3793e-07 154
- gyros_forearm_x          1 3.3798e-07 154
- magnet_belt_y            1 3.3805e-07 154
- yaw_forearm              1 3.3814e-07 154
- gyros_arm_x              1 3.3822e-07 154
- accel_belt_x             1 3.3861e-07 154
- magnet_arm_x             1 3.3899e-07 154
- gyros_belt_z             1 3.3917e-07 154
- total_accel_forearm      1 3.3944e-07 154
- roll_belt                1 3.3975e-07 154
- roll_arm                 1 3.3976e-07 154
- gyros_arm_y              1 3.3978e-07 154
- accel_dumbbell_y         1 3.3979e-07 154
- magnet_arm_z             1 3.4039e-07 154
```

```
- yaw_dumbbell             1 3.4079e-07 154
- gyros_arm_z              1 3.4096e-07 154
- cvtd_timestamp           1 3.4097e-07 154
- accel_dumbbell_z         1 3.4159e-07 154
- accel_belt_y             1 3.4201e-07 154
- user_name                1 3.4224e-07 154
- total_accel_belt         1 3.4273e-07 154
- magnet_belt_x            1 3.4354e-07 154
- magnet_dumbbell_x        1 3.4399e-07 154
- pitch_belt               1 3.4442e-07 154
- accel_forearm_x          1 3.4494e-07 154
- roll_dumbbell            1 3.4534e-07 154
- accel_forearm_z          1 3.4548e-07 154
- gyros_belt_y             1 3.4553e-07 154
- raw_timestamp_part_2     1 3.4591e-07 154
- accel_arm_x              1 3.4598e-07 154
- accel_forearm_y          1 3.4612e-07 154
- gyros_forearm_y          1 3.4631e-07 154
- total_accel_dumbbell     1 3.4646e-07 154
- pitch_forearm            1 3.4649e-07 154
- accel_dumbbell_x         1 3.4812e-07 154
- raw_timestamp_part_1     1 3.4844e-07 154
- pitch_dumbbell           1 3.4891e-07 154
- magnet_belt_z            1 3.4951e-07 154
- gyros_forearm_z          1 3.5126e-07 154
- accel_arm_z              1 3.5754e-07 154
- magnet_forearm_x         1 3.5775e-07 154
- magnet_forearm_z         1 3.6671e-07 154
- magnet_arm_y             1 3.8620e-07 154
- accel_arm_y              1 3.9653e-07 154
- pitch_arm                1 4.1776e-07 154
- num_window               1 1.1648e-06 154
<none>                       3.3615e-07 156

Step:  AIC=154
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + max_yaw_belt + min_pitch_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + var_accel_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + total_accel_forearm + avg_roll_forearm +
    stddev_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z
```

```
                          Df   Deviance AIC
- avg_roll_forearm         1 3.3645e-07 152
- amplitude_roll_dumbbell  1 3.3647e-07 152
- var_roll_dumbbell        1 3.3648e-07 152
- stddev_roll_arm          1 3.3649e-07 152
- max_yaw_belt             1 3.3649e-07 152
- kurtosis_roll_belt       1 3.3650e-07 152
- min_pitch_belt           1 3.3651e-07 152
- var_accel_arm            1 3.3655e-07 152
- gyros_belt_x             1 3.3659e-07 152
- skewness_pitch_forearm   1 3.3661e-07 152
- accel_belt_z             1 3.3664e-07 152
- max_yaw_arm              1 3.3664e-07 152
- skewness_pitch_dumbbell  1 3.3664e-07 152
- max_roll_dumbbell        1 3.3667e-07 152
- stddev_pitch_forearm     1 3.3668e-07 152
- avg_yaw_arm              1 3.3669e-07 152
- max_picth_arm            1 3.3671e-07 152
- amplitude_roll_forearm   1 3.3673e-07 152
- stddev_yaw_arm           1 3.3682e-07 152
- min_pitch_forearm        1 3.3683e-07 152
- gyros_dumbbell_x         1 3.3695e-07 152
- min_pitch_dumbbell       1 3.3702e-07 152
- min_yaw_arm              1 3.3703e-07 152
- var_yaw_forearm          1 3.3705e-07 152
- gyros_dumbbell_z         1 3.3722e-07 152
- total_accel_arm          1 3.3734e-07 152
- stddev_yaw_forearm       1 3.3734e-07 152
- min_roll_arm             1 3.3736e-07 152
- kurtosis_roll_arm        1 3.3741e-07 152
- max_roll_arm             1 3.3780e-07 152
- gyros_forearm_x          1 3.3812e-07 152
- magnet_belt_y            1 3.3812e-07 152
- yaw_forearm              1 3.3814e-07 152
- magnet_forearm_y         1 3.3816e-07 152
- gyros_arm_x              1 3.3820e-07 152
- accel_belt_x             1 3.3871e-07 152
- magnet_arm_x             1 3.3897e-07 152
- gyros_belt_z             1 3.3919e-07 152
- total_accel_forearm      1 3.3963e-07 152
- gyros_arm_y              1 3.3968e-07 152
- roll_belt                1 3.3973e-07 152
- accel_dumbbell_y         1 3.3975e-07 152
- roll_arm                 1 3.3976e-07 152
- magnet_arm_z             1 3.4038e-07 152
- yaw_dumbbell             1 3.4089e-07 152
- cvtd_timestamp           1 3.4097e-07 152
- gyros_arm_z              1 3.4106e-07 152
- accel_dumbbell_z         1 3.4166e-07 152
- accel_belt_y             1 3.4194e-07 152
- user_name                1 3.4224e-07 152
- total_accel_belt         1 3.4276e-07 152
- magnet_belt_x            1 3.4358e-07 152
```

```
- magnet_dumbbell_x        1 3.4410e-07 152
- pitch_belt               1 3.4446e-07 152
- accel_forearm_x          1 3.4490e-07 152
- roll_dumbbell            1 3.4524e-07 152
- accel_forearm_z          1 3.4543e-07 152
- gyros_belt_y             1 3.4565e-07 152
- raw_timestamp_part_2     1 3.4590e-07 152
- accel_arm_x              1 3.4627e-07 152
- accel_forearm_y          1 3.4627e-07 152
- gyros_forearm_y          1 3.4641e-07 152
- pitch_forearm            1 3.4655e-07 152
- total_accel_dumbbell     1 3.4662e-07 152
- accel_dumbbell_x         1 3.4821e-07 152
- raw_timestamp_part_1     1 3.4849e-07 152
- pitch_dumbbell           1 3.4903e-07 152
- magnet_belt_z            1 3.4943e-07 152
- gyros_forearm_z          1 3.5122e-07 152
- magnet_forearm_x         1 3.5782e-07 152
- accel_arm_z              1 3.5788e-07 152
- magnet_forearm_z         1 3.6695e-07 152
- magnet_arm_y             1 3.8648e-07 152
- accel_arm_y              1 3.9687e-07 152
- pitch_arm                1 4.1804e-07 152
- num_window               1 1.1340e-06 152
<none>                       3.3627e-07 154

Step:  AIC=152
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + max_yaw_belt + min_pitch_belt + gyros_belt_x +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + var_accel_arm +
    stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm + gyros_arm_x +
    gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z +
    magnet_arm_x + magnet_arm_y + magnet_arm_z + kurtosis_roll_arm +
    max_roll_arm + max_picth_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    skewness_pitch_dumbbell + max_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    amplitude_roll_forearm + total_accel_forearm + stddev_pitch_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z


                          Df   Deviance AIC
- max_yaw_belt             1 3.3663e-07 150
- kurtosis_roll_belt       1 3.3664e-07 150
- amplitude_roll_dumbbell  1 3.3666e-07 150
- stddev_pitch_forearm     1 3.3667e-07 150
- var_accel_arm            1 3.3670e-07 150
- stddev_roll_arm          1 3.3671e-07 150
```

- skewness_pitch_dumbbell 1 3.3675e-07 150
- gyros_belt_x   1 3.3676e-07 150
- max_yaw_arm   1 3.3680e-07 150
- var_roll_dumbbell   1 3.3681e-07 150
- amplitude_roll_forearm   1 3.3682e-07 150
- max_picth_arm   1 3.3686e-07 150
- max_roll_dumbbell   1 3.3686e-07 150
- accel_belt_z   1 3.3686e-07 150
- avg_yaw_arm   1 3.3690e-07 150
- skewness_pitch_forearm   1 3.3700e-07 150
- min_pitch_belt   1 3.3702e-07 150
- min_yaw_arm   1 3.3704e-07 150
- stddev_yaw_arm   1 3.3707e-07 150
- gyros_dumbbell_x   1 3.3708e-07 150
- var_yaw_forearm   1 3.3710e-07 150
- gyros_dumbbell_z   1 3.3731e-07 150
- min_pitch_dumbbell   1 3.3733e-07 150
- stddev_yaw_forearm   1 3.3733e-07 150
- kurtosis_roll_arm   1 3.3740e-07 150
- min_roll_arm   1 3.3750e-07 150
- total_accel_arm   1 3.3757e-07 150
- max_roll_arm   1 3.3780e-07 150
- min_pitch_forearm   1 3.3797e-07 150
- magnet_belt_y   1 3.3829e-07 150
- magnet_forearm_y   1 3.3834e-07 150
- gyros_forearm_x   1 3.3834e-07 150
- yaw_forearm   1 3.3844e-07 150
- gyros_arm_x   1 3.3852e-07 150
- accel_belt_x   1 3.3891e-07 150
- magnet_arm_x   1 3.3937e-07 150
- gyros_belt_z   1 3.3941e-07 150
- total_accel_forearm   1 3.3978e-07 150
- accel_dumbbell_y   1 3.3983e-07 150
- roll_belt   1 3.3996e-07 150
- roll_arm   1 3.4005e-07 150
- gyros_arm_y   1 3.4008e-07 150
- magnet_arm_z   1 3.4057e-07 150
- yaw_dumbbell   1 3.4105e-07 150
- gyros_arm_z   1 3.4117e-07 150
- cvtd_timestamp   1 3.4120e-07 150
- accel_dumbbell_z   1 3.4169e-07 150
- accel_belt_y   1 3.4221e-07 150
- user_name   1 3.4258e-07 150
- total_accel_belt   1 3.4323e-07 150
- magnet_belt_x   1 3.4389e-07 150
- magnet_dumbbell_x   1 3.4429e-07 150
- pitch_belt   1 3.4461e-07 150
- accel_forearm_x   1 3.4514e-07 150
- roll_dumbbell   1 3.4535e-07 150
- accel_forearm_z   1 3.4577e-07 150
- gyros_belt_y   1 3.4594e-07 150
- raw_timestamp_part_2   1 3.4605e-07 150
- accel_forearm_y   1 3.4636e-07 150
- accel_arm_x   1 3.4653e-07 150
- gyros_forearm_y   1 3.4655e-07 150
- total_accel_dumbbell   1 3.4667e-07 150
- pitch_forearm   1 3.4669e-07 150

```
- accel_dumbbell_x         1 3.4825e-07 150
- raw_timestamp_part_1     1 3.4886e-07 150
- pitch_dumbbell           1 3.4915e-07 150
- magnet_belt_z            1 3.4947e-07 150
- gyros_forearm_z          1 3.5171e-07 150
- magnet_forearm_x         1 3.5789e-07 150
- accel_arm_z              1 3.5812e-07 150
- magnet_forearm_z         1 3.6694e-07 150
- magnet_arm_y             1 3.8646e-07 150
- accel_arm_y              1 3.9671e-07 150
- pitch_arm                1 4.1832e-07 150
- num_window               1 1.1333e-06 150
<none>                       3.3645e-07 152

Step:  AIC=150
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    kurtosis_roll_belt + min_pitch_belt + gyros_belt_x + gyros_belt_y +
    gyros_belt_z + accel_belt_x + accel_belt_y + accel_belt_z +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + total_accel_arm + var_accel_arm + stddev_roll_arm +
    avg_yaw_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + amplitude_roll_forearm +
    total_accel_forearm + stddev_pitch_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- kurtosis_roll_belt       1 3.3661e-07 148
- stddev_pitch_forearm     1 3.3667e-07 148
- amplitude_roll_dumbbell  1 3.3670e-07 148
- stddev_roll_arm          1 3.3682e-07 148
- amplitude_roll_forearm   1 3.3687e-07 148
- max_picth_arm            1 3.3687e-07 148
- avg_yaw_arm              1 3.3687e-07 148
- var_roll_dumbbell        1 3.3690e-07 148
- max_roll_dumbbell        1 3.3691e-07 148
- skewness_pitch_dumbbell  1 3.3691e-07 148
- var_accel_arm            1 3.3692e-07 148
- gyros_belt_x             1 3.3697e-07 148
- skewness_pitch_forearm   1 3.3702e-07 148
- stddev_yaw_arm           1 3.3702e-07 148
- accel_belt_z             1 3.3705e-07 148
- min_pitch_belt           1 3.3706e-07 148
- max_yaw_arm              1 3.3707e-07 148
- var_yaw_forearm          1 3.3721e-07 148
- gyros_dumbbell_x         1 3.3727e-07 148
- min_yaw_arm              1 3.3729e-07 148
```

```
- kurtosis_roll_arm        1 3.3741e-07 148
- min_pitch_dumbbell       1 3.3745e-07 148
- gyros_dumbbell_z         1 3.3752e-07 148
- stddev_yaw_forearm       1 3.3753e-07 148
- total_accel_arm          1 3.3765e-07 148
- min_pitch_forearm        1 3.3801e-07 148
- min_roll_arm             1 3.3804e-07 148
- max_roll_arm             1 3.3832e-07 148
- magnet_belt_y            1 3.3849e-07 148
- gyros_forearm_x          1 3.3851e-07 148
- magnet_forearm_y         1 3.3852e-07 148
- yaw_forearm              1 3.3858e-07 148
- gyros_arm_x              1 3.3870e-07 148
- accel_belt_x             1 3.3908e-07 148
- magnet_arm_x             1 3.3950e-07 148
- gyros_belt_z             1 3.3952e-07 148
- accel_dumbbell_y         1 3.4001e-07 148
- total_accel_forearm      1 3.4003e-07 148
- roll_belt                1 3.4017e-07 148
- gyros_arm_y              1 3.4024e-07 148
- roll_arm                 1 3.4024e-07 148
- magnet_arm_z             1 3.4073e-07 148
- yaw_dumbbell             1 3.4118e-07 148
- gyros_arm_z              1 3.4127e-07 148
- cvtd_timestamp           1 3.4142e-07 148
- accel_dumbbell_z         1 3.4194e-07 148
- accel_belt_y             1 3.4256e-07 148
- user_name                1 3.4272e-07 148
- total_accel_belt         1 3.4342e-07 148
- magnet_belt_x            1 3.4407e-07 148
- magnet_dumbbell_x        1 3.4457e-07 148
- pitch_belt               1 3.4483e-07 148
- accel_forearm_x          1 3.4527e-07 148
- roll_dumbbell            1 3.4545e-07 148
- accel_forearm_z          1 3.4588e-07 148
- gyros_belt_y             1 3.4611e-07 148
- raw_timestamp_part_2     1 3.4622e-07 148
- accel_forearm_y          1 3.4664e-07 148
- accel_arm_x              1 3.4670e-07 148
- gyros_forearm_y          1 3.4675e-07 148
- pitch_forearm            1 3.4686e-07 148
- total_accel_dumbbell     1 3.4693e-07 148
- accel_dumbbell_x         1 3.4863e-07 148
- raw_timestamp_part_1     1 3.4903e-07 148
- pitch_dumbbell           1 3.4946e-07 148
- magnet_belt_z            1 3.4982e-07 148
- gyros_forearm_z          1 3.5183e-07 148
- magnet_forearm_x         1 3.5805e-07 148
- accel_arm_z              1 3.5822e-07 148
- magnet_forearm_z         1 3.6704e-07 148
- magnet_arm_y             1 3.8671e-07 148
- accel_arm_y              1 3.9710e-07 148
- pitch_arm                1 4.1863e-07 148
- num_window               1 1.1263e-06 148
<none>                       3.3663e-07 150

Step:  AIC=148
```

```
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    var_accel_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    stddev_pitch_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z



                          Df   Deviance AIC
- stddev_pitch_forearm     1 3.3664e-07 146
- amplitude_roll_forearm   1 3.3680e-07 146
- var_accel_arm            1 3.3683e-07 146
- amplitude_roll_dumbbell  1 3.3683e-07 146
- skewness_pitch_dumbbell  1 3.3685e-07 146
- max_roll_dumbbell        1 3.3686e-07 146
- avg_yaw_arm              1 3.3689e-07 146
- stddev_roll_arm          1 3.3690e-07 146
- max_picth_arm            1 3.3693e-07 146
- gyros_belt_x             1 3.3694e-07 146
- stddev_yaw_arm           1 3.3694e-07 146
- max_yaw_arm              1 3.3700e-07 146
- accel_belt_z             1 3.3701e-07 146
- min_pitch_belt           1 3.3702e-07 146
- var_roll_dumbbell        1 3.3705e-07 146
- var_yaw_forearm          1 3.3709e-07 146
- skewness_pitch_forearm   1 3.3714e-07 146
- gyros_dumbbell_x         1 3.3724e-07 146
- min_yaw_arm              1 3.3725e-07 146
- stddev_yaw_forearm       1 3.3741e-07 146
- kurtosis_roll_arm        1 3.3741e-07 146
- min_pitch_dumbbell       1 3.3744e-07 146
- gyros_dumbbell_z         1 3.3754e-07 146
- total_accel_arm          1 3.3758e-07 146
- min_roll_arm             1 3.3796e-07 146
- min_pitch_forearm        1 3.3798e-07 146
- yaw_forearm              1 3.3844e-07 146
- gyros_forearm_x          1 3.3847e-07 146
- magnet_belt_y            1 3.3852e-07 146
- magnet_forearm_y         1 3.3853e-07 146
- max_roll_arm             1 3.3864e-07 146
```

```
- gyros_arm_x              1 3.3872e-07 146
- accel_belt_x             1 3.3903e-07 146
- magnet_arm_x             1 3.3948e-07 146
- gyros_belt_z             1 3.3951e-07 146
- accel_dumbbell_y         1 3.3999e-07 146
- total_accel_forearm      1 3.4001e-07 146
- roll_belt                1 3.4009e-07 146
- gyros_arm_y              1 3.4020e-07 146
- roll_arm                 1 3.4021e-07 146
- magnet_arm_z             1 3.4072e-07 146
- yaw_dumbbell             1 3.4112e-07 146
- gyros_arm_z              1 3.4134e-07 146
- cvtd_timestamp           1 3.4142e-07 146
- accel_dumbbell_z         1 3.4195e-07 146
- accel_belt_y             1 3.4251e-07 146
- user_name                1 3.4273e-07 146
- total_accel_belt         1 3.4334e-07 146
- magnet_belt_x            1 3.4408e-07 146
- magnet_dumbbell_x        1 3.4464e-07 146
- pitch_belt               1 3.4484e-07 146
- accel_forearm_x          1 3.4526e-07 146
- roll_dumbbell            1 3.4532e-07 146
- accel_forearm_z          1 3.4580e-07 146
- gyros_belt_y             1 3.4613e-07 146
- raw_timestamp_part_2     1 3.4620e-07 146
- accel_arm_x              1 3.4662e-07 146
- gyros_forearm_y          1 3.4673e-07 146
- accel_forearm_y          1 3.4676e-07 146
- pitch_forearm            1 3.4687e-07 146
- total_accel_dumbbell     1 3.4700e-07 146
- accel_dumbbell_x         1 3.4865e-07 146
- raw_timestamp_part_1     1 3.4913e-07 146
- pitch_dumbbell           1 3.4953e-07 146
- magnet_belt_z            1 3.4978e-07 146
- gyros_forearm_z          1 3.5183e-07 146
- magnet_forearm_x         1 3.5797e-07 146
- accel_arm_z              1 3.5838e-07 146
- magnet_forearm_z         1 3.6706e-07 146
- magnet_arm_y             1 3.8676e-07 146
- accel_arm_y              1 3.9712e-07 146
- pitch_arm                1 4.1863e-07 146
- num_window               1 1.1267e-06 146
<none>                       3.3661e-07 148

Step:  AIC=146
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    var_accel_arm + stddev_roll_arm + avg_yaw_arm + stddev_yaw_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_picth_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + skewness_pitch_dumbbell + max_roll_dumbbell +
    min_pitch_dumbbell + amplitude_roll_dumbbell + total_accel_dumbbell +
```

```
    var_roll_dumbbell + gyros_dumbbell_x + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + amplitude_roll_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z


- roll_arm                1 3.4066e-07 140
- gyros_arm_y             1 3.4071e-07 140
- magnet_arm_z            1 3.4117e-07 140
- yaw_dumbbell            1 3.4129e-07 140
- gyros_arm_z             1 3.4156e-07 140
- cvtd_timestamp          1 3.4164e-07 140
- accel_dumbbell_z        1 3.4204e-07 140
- accel_belt_y            1 3.4266e-07 140
- user_name               1 3.4308e-07 140
- total_accel_belt        1 3.4355e-07 140
- magnet_belt_x           1 3.4456e-07 140
- magnet_dumbbell_x       1 3.4474e-07 140
- pitch_belt              1 3.4518e-07 140
- accel_forearm_x         1 3.4540e-07 140
- roll_dumbbell           1 3.4564e-07 140
- accel_forearm_z         1 3.4630e-07 140
- raw_timestamp_part_2    1 3.4642e-07 140
- gyros_belt_y            1 3.4661e-07 140
- accel_forearm_y         1 3.4687e-07 140
- accel_arm_x             1 3.4689e-07 140
- gyros_forearm_y         1 3.4699e-07 140
- pitch_forearm           1 3.4701e-07 140
- total_accel_dumbbell    1 3.4711e-07 140
- accel_dumbbell_x        1 3.4872e-07 140
- pitch_dumbbell          1 3.4964e-07 140
- raw_timestamp_part_1    1 3.4978e-07 140
- magnet_belt_z           1 3.5009e-07 140
- gyros_forearm_z         1 3.5206e-07 140
- magnet_forearm_x        1 3.5820e-07 140
- accel_arm_z             1 3.5864e-07 140
- magnet_forearm_z        1 3.6745e-07 140
- magnet_arm_y            1 3.8710e-07 140
- accel_arm_y             1 3.9734e-07 140
- pitch_arm               1 4.1884e-07 140
- num_window              1 1.1271e-06 140
<none>                      3.3694e-07 142

Step:  AIC=140
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    var_accel_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_picth_arm + max_yaw_arm + min_roll_arm + min_yaw_arm +
```

```
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- max_picth_arm            1 3.3716e-07 138
- stddev_yaw_arm           1 3.3735e-07 138
- skewness_pitch_dumbbell  1 3.3737e-07 138
- var_accel_arm            1 3.3739e-07 138
- gyros_belt_x             1 3.3748e-07 138
- skewness_pitch_forearm   1 3.3750e-07 138
- accel_belt_z             1 3.3760e-07 138
- min_pitch_belt           1 3.3767e-07 138
- max_yaw_arm              1 3.3771e-07 138
- gyros_dumbbell_x         1 3.3774e-07 138
- min_pitch_dumbbell       1 3.3778e-07 138
- min_yaw_arm              1 3.3778e-07 138
- kurtosis_roll_arm        1 3.3779e-07 138
- var_roll_dumbbell        1 3.3779e-07 138
- max_roll_dumbbell        1 3.3781e-07 138
- amplitude_roll_dumbbell  1 3.3784e-07 138
- gyros_dumbbell_z         1 3.3800e-07 138
- total_accel_arm          1 3.3803e-07 138
- min_pitch_forearm        1 3.3839e-07 138
- stddev_yaw_forearm       1 3.3841e-07 138
- var_yaw_forearm          1 3.3842e-07 138
- min_roll_arm             1 3.3861e-07 138
- max_roll_arm             1 3.3881e-07 138
- gyros_forearm_x          1 3.3886e-07 138
- magnet_belt_y            1 3.3891e-07 138
- magnet_forearm_y         1 3.3898e-07 138
- yaw_forearm              1 3.3923e-07 138
- gyros_arm_x              1 3.3944e-07 138
- accel_belt_x             1 3.3965e-07 138
- magnet_arm_x             1 3.4018e-07 138
- accel_dumbbell_y         1 3.4023e-07 138
- gyros_belt_z             1 3.4025e-07 138
- total_accel_forearm      1 3.4039e-07 138
- roll_belt                1 3.4045e-07 138
- roll_arm                 1 3.4069e-07 138
- gyros_arm_y              1 3.4104e-07 138
- magnet_arm_z             1 3.4131e-07 138
- yaw_dumbbell             1 3.4148e-07 138
- gyros_arm_z              1 3.4168e-07 138
- cvtd_timestamp           1 3.4182e-07 138
- accel_dumbbell_z         1 3.4212e-07 138
- accel_belt_y             1 3.4286e-07 138
- user_name                1 3.4322e-07 138
- total_accel_belt         1 3.4372e-07 138
- magnet_dumbbell_x        1 3.4485e-07 138
- magnet_belt_x            1 3.4487e-07 138
```

```
- pitch_belt               1 3.4527e-07 138
- accel_forearm_x          1 3.4549e-07 138
- roll_dumbbell            1 3.4584e-07 138
- accel_forearm_z          1 3.4638e-07 138
- raw_timestamp_part_2     1 3.4664e-07 138
- gyros_belt_y             1 3.4683e-07 138
- accel_forearm_y          1 3.4697e-07 138
- accel_arm_x              1 3.4701e-07 138
- pitch_forearm            1 3.4708e-07 138
- gyros_forearm_y          1 3.4709e-07 138
- total_accel_dumbbell     1 3.4725e-07 138
- accel_dumbbell_x         1 3.4876e-07 138
- pitch_dumbbell           1 3.4971e-07 138
- raw_timestamp_part_1     1 3.4980e-07 138
- magnet_belt_z            1 3.5028e-07 138
- gyros_forearm_z          1 3.5211e-07 138
- magnet_forearm_x         1 3.5821e-07 138
- accel_arm_z              1 3.5887e-07 138
- magnet_forearm_z         1 3.6787e-07 138
- magnet_arm_y             1 3.8710e-07 138
- accel_arm_y              1 3.9735e-07 138
- pitch_arm                1 4.1885e-07 138
- num_window               1 1.1280e-06 138
<none>                       3.3712e-07 140

Step:  AIC=138
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    var_accel_arm + stddev_yaw_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- var_accel_arm            1 3.3737e-07 136
- stddev_yaw_arm           1 3.3738e-07 136
- skewness_pitch_dumbbell  1 3.3740e-07 136
- gyros_belt_x             1 3.3749e-07 136
- skewness_pitch_forearm   1 3.3757e-07 136
- accel_belt_z             1 3.3762e-07 136
- min_pitch_belt           1 3.3774e-07 136
- var_roll_dumbbell        1 3.3774e-07 136
- max_yaw_arm              1 3.3775e-07 136
- gyros_dumbbell_x         1 3.3777e-07 136
- min_pitch_dumbbell       1 3.3779e-07 136
```

- min_yaw_arm   1 3.3781e-07 136
- amplitude_roll_dumbbell 1 3.3787e-07 136
- max_roll_dumbbell   1 3.3788e-07 136
- kurtosis_roll_arm   1 3.3803e-07 136
- gyros_dumbbell_z   1 3.3805e-07 136
- total_accel_arm   1 3.3809e-07 136
- min_pitch_forearm   1 3.3842e-07 136
- stddev_yaw_forearm   1 3.3844e-07 136
- var_yaw_forearm   1 3.3844e-07 136
- gyros_forearm_x   1 3.3888e-07 136
- magnet_belt_y   1 3.3893e-07 136
- max_roll_arm   1 3.3894e-07 136
- min_roll_arm   1 3.3894e-07 136
- magnet_forearm_y   1 3.3901e-07 136
- yaw_forearm   1 3.3926e-07 136
- gyros_arm_x   1 3.3943e-07 136
- accel_belt_x   1 3.3967e-07 136
- magnet_arm_x   1 3.4015e-07 136
- gyros_belt_z   1 3.4029e-07 136
- accel_dumbbell_y   1 3.4031e-07 136
- total_accel_forearm   1 3.4038e-07 136
- roll_belt   1 3.4047e-07 136
- roll_arm   1 3.4068e-07 136
- gyros_arm_y   1 3.4102e-07 136
- magnet_arm_z   1 3.4135e-07 136
- yaw_dumbbell   1 3.4155e-07 136
- gyros_arm_z   1 3.4174e-07 136
- cvtd_timestamp   1 3.4185e-07 136
- accel_dumbbell_z   1 3.4219e-07 136
- accel_belt_y   1 3.4290e-07 136
- user_name   1 3.4329e-07 136
- total_accel_belt   1 3.4384e-07 136
- magnet_dumbbell_x   1 3.4479e-07 136
- magnet_belt_x   1 3.4487e-07 136
- pitch_belt   1 3.4529e-07 136
- accel_forearm_x   1 3.4549e-07 136
- roll_dumbbell   1 3.4584e-07 136
- accel_forearm_z   1 3.4643e-07 136
- raw_timestamp_part_2   1 3.4662e-07 136
- gyros_belt_y   1 3.4687e-07 136
- accel_forearm_y   1 3.4700e-07 136
- accel_arm_x   1 3.4701e-07 136
- gyros_forearm_y   1 3.4713e-07 136
- pitch_forearm   1 3.4720e-07 136
- total_accel_dumbbell   1 3.4725e-07 136
- accel_dumbbell_x   1 3.4875e-07 136
- pitch_dumbbell   1 3.4974e-07 136
- raw_timestamp_part_1   1 3.4986e-07 136
- magnet_belt_z   1 3.5035e-07 136
- gyros_forearm_z   1 3.5232e-07 136
- magnet_forearm_x   1 3.5827e-07 136
- accel_arm_z   1 3.5886e-07 136
- magnet_forearm_z   1 3.6801e-07 136
- magnet_arm_y   1 3.8705e-07 136
- accel_arm_y   1 3.9730e-07 136
- pitch_arm   1 4.1905e-07 136
- num_window   1 1.1312e-06 136

```
<none>                       3.3716e-07 138

Step:  AIC=136
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + skewness_pitch_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                           Df   Deviance AIC
- skewness_pitch_dumbbell   1 3.3739e-07 134
- stddev_yaw_arm            1 3.3741e-07 134
- skewness_pitch_forearm    1 3.3758e-07 134
- gyros_belt_x              1 3.3772e-07 134
- min_pitch_belt            1 3.3777e-07 134
- accel_belt_z              1 3.3789e-07 134
- gyros_dumbbell_x          1 3.3790e-07 134
- max_roll_dumbbell         1 3.3792e-07 134
- amplitude_roll_dumbbell   1 3.3796e-07 134
- kurtosis_roll_arm         1 3.3801e-07 134
- max_yaw_arm               1 3.3804e-07 134
- var_roll_dumbbell         1 3.3806e-07 134
- min_yaw_arm               1 3.3808e-07 134
- min_pitch_dumbbell        1 3.3808e-07 134
- gyros_dumbbell_z          1 3.3817e-07 134
- total_accel_arm           1 3.3828e-07 134
- min_pitch_forearm         1 3.3859e-07 134
- var_yaw_forearm           1 3.3880e-07 134
- stddev_yaw_forearm        1 3.3888e-07 134
- max_roll_arm              1 3.3898e-07 134
- gyros_forearm_x           1 3.3899e-07 134
- min_roll_arm              1 3.3907e-07 134
- magnet_belt_y             1 3.3910e-07 134
- magnet_forearm_y          1 3.3916e-07 134
- yaw_forearm               1 3.3951e-07 134
- gyros_arm_x               1 3.3961e-07 134
- accel_belt_x              1 3.3983e-07 134
- magnet_arm_x              1 3.4034e-07 134
- accel_dumbbell_y          1 3.4043e-07 134
- total_accel_forearm       1 3.4048e-07 134
- gyros_belt_z              1 3.4054e-07 134
- roll_belt                 1 3.4062e-07 134
- roll_arm                  1 3.4086e-07 134
- gyros_arm_y               1 3.4120e-07 134
```

```
- magnet_arm_z             1 3.4165e-07 134
- yaw_dumbbell             1 3.4170e-07 134
- gyros_arm_z              1 3.4184e-07 134
- cvtd_timestamp           1 3.4202e-07 134
- accel_dumbbell_z         1 3.4226e-07 134
- accel_belt_y             1 3.4314e-07 134
- user_name                1 3.4348e-07 134
- total_accel_belt         1 3.4418e-07 134
- magnet_belt_x            1 3.4495e-07 134
- magnet_dumbbell_x        1 3.4499e-07 134
- pitch_belt               1 3.4552e-07 134
- accel_forearm_x          1 3.4574e-07 134
- roll_dumbbell            1 3.4596e-07 134
- accel_forearm_z          1 3.4648e-07 134
- raw_timestamp_part_2     1 3.4696e-07 134
- accel_arm_x              1 3.4703e-07 134
- gyros_belt_y             1 3.4704e-07 134
- accel_forearm_y          1 3.4722e-07 134
- gyros_forearm_y          1 3.4736e-07 134
- pitch_forearm            1 3.4737e-07 134
- total_accel_dumbbell     1 3.4739e-07 134
- accel_dumbbell_x         1 3.4896e-07 134
- pitch_dumbbell           1 3.4985e-07 134
- raw_timestamp_part_1     1 3.5003e-07 134
- magnet_belt_z            1 3.5066e-07 134
- gyros_forearm_z          1 3.5235e-07 134
- magnet_forearm_x         1 3.5870e-07 134
- accel_arm_z              1 3.5889e-07 134
- magnet_forearm_z         1 3.6820e-07 134
- magnet_arm_y             1 3.8737e-07 134
- accel_arm_y              1 3.9731e-07 134
- pitch_arm                1 4.1921e-07 134
- num_window               1 1.1823e-06 134
<none>                       3.3737e-07 136

Step:  AIC=134
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    stddev_yaw_arm + gyros_arm_x + gyros_arm_y + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + max_roll_dumbbell + min_pitch_dumbbell +
    amplitude_roll_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_x + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    total_accel_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                          Df   Deviance AIC
```

- stddev_yaw_arm 1 3.3753e-07 132
- gyros_belt_x 1 3.3773e-07 132
- accel_belt_z 1 3.3782e-07 132
- min_pitch_belt 1 3.3797e-07 132
- gyros_dumbbell_x 1 3.3797e-07 132
- kurtosis_roll_arm 1 3.3803e-07 132
- amplitude_roll_dumbbell 1 3.3803e-07 132
- max_yaw_arm 1 3.3806e-07 132
- max_roll_dumbbell 1 3.3807e-07 132
- skewness_pitch_forearm 1 3.3810e-07 132
- min_yaw_arm 1 3.3811e-07 132
- min_pitch_dumbbell 1 3.3815e-07 132
- var_roll_dumbbell 1 3.3825e-07 132
- total_accel_arm 1 3.3832e-07 132
- gyros_dumbbell_z 1 3.3837e-07 132
- min_pitch_forearm 1 3.3882e-07 132
- gyros_forearm_x 1 3.3898e-07 132
- magnet_belt_y 1 3.3910e-07 132
- magnet_forearm_y 1 3.3918e-07 132
- var_yaw_forearm 1 3.3919e-07 132
- stddev_yaw_forearm 1 3.3924e-07 132
- max_roll_arm 1 3.3933e-07 132
- min_roll_arm 1 3.3942e-07 132
- yaw_forearm 1 3.3952e-07 132
- gyros_arm_x 1 3.3961e-07 132
- accel_belt_x 1 3.3987e-07 132
- magnet_arm_x 1 3.4036e-07 132
- accel_dumbbell_y 1 3.4046e-07 132
- gyros_belt_z 1 3.4051e-07 132
- total_accel_forearm 1 3.4054e-07 132
- roll_belt 1 3.4078e-07 132
- roll_arm 1 3.4090e-07 132
- gyros_arm_y 1 3.4118e-07 132
- magnet_arm_z 1 3.4160e-07 132
- yaw_dumbbell 1 3.4176e-07 132
- gyros_arm_z 1 3.4191e-07 132
- cvtd_timestamp 1 3.4205e-07 132
- accel_dumbbell_z 1 3.4230e-07 132
- accel_belt_y 1 3.4315e-07 132
- user_name 1 3.4355e-07 132
- total_accel_belt 1 3.4421e-07 132
- magnet_dumbbell_x 1 3.4504e-07 132
- magnet_belt_x 1 3.4507e-07 132
- pitch_belt 1 3.4562e-07 132
- accel_forearm_x 1 3.4578e-07 132
- roll_dumbbell 1 3.4613e-07 132
- accel_forearm_z 1 3.4647e-07 132
- gyros_belt_y 1 3.4705e-07 132
- accel_arm_x 1 3.4707e-07 132
- raw_timestamp_part_2 1 3.4709e-07 132
- accel_forearm_y 1 3.4721e-07 132
- pitch_forearm 1 3.4736e-07 132
- gyros_forearm_y 1 3.4742e-07 132
- total_accel_dumbbell 1 3.4746e-07 132
- accel_dumbbell_x 1 3.4901e-07 132
- pitch_dumbbell 1 3.4986e-07 132
- raw_timestamp_part_1 1 3.5002e-07 132

```
- magnet_belt_z            1 3.5070e-07 132
- gyros_forearm_z          1 3.5233e-07 132
- magnet_forearm_x         1 3.5870e-07 132
- accel_arm_z              1 3.5896e-07 132
- magnet_forearm_z         1 3.6822e-07 132
- magnet_arm_y             1 3.8735e-07 132
- accel_arm_y              1 3.9716e-07 132
- pitch_arm                1 4.1933e-07 132
- num_window               1 1.1315e-06 132
<none>                       3.3739e-07 134

Step:  AIC=132
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_x + gyros_belt_y + gyros_belt_z +
    accel_belt_x + accel_belt_y + accel_belt_z + magnet_belt_x +
    magnet_belt_y + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- gyros_belt_x             1 3.3791e-07 130
- amplitude_roll_dumbbell  1 3.3793e-07 130
- max_roll_dumbbell        1 3.3797e-07 130
- min_pitch_belt           1 3.3798e-07 130
- accel_belt_z             1 3.3802e-07 130
- kurtosis_roll_arm        1 3.3806e-07 130
- gyros_dumbbell_x         1 3.3807e-07 130
- skewness_pitch_forearm   1 3.3813e-07 130
- var_roll_dumbbell        1 3.3816e-07 130
- gyros_dumbbell_z         1 3.3819e-07 130
- min_pitch_dumbbell       1 3.3828e-07 130
- total_accel_arm          1 3.3829e-07 130
- max_yaw_arm              1 3.3833e-07 130
- min_yaw_arm              1 3.3845e-07 130
- min_pitch_forearm        1 3.3901e-07 130
- gyros_forearm_x          1 3.3917e-07 130
- magnet_belt_y            1 3.3926e-07 130
- var_yaw_forearm          1 3.3928e-07 130
- stddev_yaw_forearm       1 3.3934e-07 130
- magnet_forearm_y         1 3.3936e-07 130
- max_roll_arm             1 3.3945e-07 130
- min_roll_arm             1 3.3945e-07 130
- yaw_forearm              1 3.3961e-07 130
- gyros_arm_x              1 3.3965e-07 130
- accel_belt_x             1 3.4002e-07 130
- magnet_arm_x             1 3.4037e-07 130
```

```
- accel_dumbbell_y         1 3.4043e-07 130
- roll_belt                1 3.4066e-07 130
- gyros_belt_z             1 3.4071e-07 130
- total_accel_forearm      1 3.4073e-07 130
- roll_arm                 1 3.4079e-07 130
- gyros_arm_y              1 3.4121e-07 130
- magnet_arm_z             1 3.4160e-07 130
- yaw_dumbbell             1 3.4181e-07 130
- gyros_arm_z              1 3.4195e-07 130
- cvtd_timestamp           1 3.4211e-07 130
- accel_dumbbell_z         1 3.4233e-07 130
- accel_belt_y             1 3.4301e-07 130
- user_name                1 3.4364e-07 130
- total_accel_belt         1 3.4404e-07 130
- magnet_belt_x            1 3.4516e-07 130
- magnet_dumbbell_x        1 3.4521e-07 130
- accel_forearm_x          1 3.4556e-07 130
- pitch_belt               1 3.4570e-07 130
- roll_dumbbell            1 3.4587e-07 130
- accel_forearm_z          1 3.4659e-07 130
- raw_timestamp_part_2     1 3.4692e-07 130
- gyros_belt_y             1 3.4715e-07 130
- accel_arm_x              1 3.4721e-07 130
- gyros_forearm_y          1 3.4730e-07 130
- accel_forearm_y          1 3.4734e-07 130
- pitch_forearm            1 3.4739e-07 130
- total_accel_dumbbell     1 3.4763e-07 130
- accel_dumbbell_x         1 3.4895e-07 130
- pitch_dumbbell           1 3.4988e-07 130
- raw_timestamp_part_1     1 3.5024e-07 130
- magnet_belt_z            1 3.5063e-07 130
- gyros_forearm_z          1 3.5244e-07 130
- magnet_forearm_x         1 3.5873e-07 130
- accel_arm_z              1 3.5925e-07 130
- magnet_forearm_z         1 3.6824e-07 130
- magnet_arm_y             1 3.8746e-07 130
- accel_arm_y              1 3.9721e-07 130
- pitch_arm                1 4.1936e-07 130
- num_window               1 1.1312e-06 130
<none>                       3.3753e-07 132

Step:  AIC=130
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_x +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
```

```
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- gyros_dumbbell_x         1 3.3830e-07 128
- amplitude_roll_dumbbell  1 3.3831e-07 128
- min_pitch_belt           1 3.3834e-07 128
- max_roll_dumbbell        1 3.3835e-07 128
- kurtosis_roll_arm        1 3.3843e-07 128
- skewness_pitch_forearm   1 3.3846e-07 128
- accel_belt_z             1 3.3851e-07 128
- var_roll_dumbbell        1 3.3852e-07 128
- min_pitch_dumbbell       1 3.3863e-07 128
- max_yaw_arm              1 3.3865e-07 128
- min_yaw_arm              1 3.3878e-07 128
- gyros_forearm_x          1 3.3913e-07 128
- gyros_dumbbell_z         1 3.3925e-07 128
- min_pitch_forearm        1 3.3933e-07 128
- var_yaw_forearm          1 3.3959e-07 128
- stddev_yaw_forearm       1 3.3963e-07 128
- min_roll_arm             1 3.3974e-07 128
- max_roll_arm             1 3.3976e-07 128
- total_accel_arm          1 3.3988e-07 128
- yaw_forearm              1 3.3995e-07 128
- magnet_forearm_y         1 3.4006e-07 128
- gyros_arm_x              1 3.4013e-07 128
- accel_belt_x             1 3.4019e-07 128
- magnet_belt_y            1 3.4021e-07 128
- gyros_belt_z             1 3.4084e-07 128
- roll_arm                 1 3.4086e-07 128
- total_accel_forearm      1 3.4102e-07 128
- gyros_arm_y              1 3.4160e-07 128
- roll_belt                1 3.4164e-07 128
- accel_dumbbell_y         1 3.4208e-07 128
- magnet_arm_x             1 3.4210e-07 128
- magnet_arm_z             1 3.4211e-07 128
- cvtd_timestamp           1 3.4297e-07 128
- accel_dumbbell_z         1 3.4306e-07 128
- yaw_dumbbell             1 3.4307e-07 128
- accel_belt_y             1 3.4348e-07 128
- gyros_arm_z              1 3.4369e-07 128
- user_name                1 3.4433e-07 128
- total_accel_belt         1 3.4448e-07 128
- magnet_dumbbell_x        1 3.4543e-07 128
- pitch_belt               1 3.4667e-07 128
- accel_forearm_z          1 3.4671e-07 128
- accel_forearm_x          1 3.4691e-07 128
- magnet_belt_x            1 3.4706e-07 128
- roll_dumbbell            1 3.4747e-07 128
- raw_timestamp_part_2     1 3.4764e-07 128
- gyros_belt_y             1 3.4785e-07 128
- accel_arm_x              1 3.4789e-07 128
- accel_forearm_y          1 3.4789e-07 128
- gyros_forearm_y          1 3.4833e-07 128
- pitch_forearm            1 3.4881e-07 128
- accel_dumbbell_x         1 3.4918e-07 128
- pitch_dumbbell           1 3.5029e-07 128
```

```
- total_accel_dumbbell     1 3.5082e-07 128
- raw_timestamp_part_1     1 3.5196e-07 128
- gyros_forearm_z          1 3.5674e-07 128
- magnet_belt_z            1 3.5733e-07 128
- accel_arm_z              1 3.6022e-07 128
- magnet_forearm_x         1 3.6118e-07 128
- magnet_forearm_z         1 3.7052e-07 128
- magnet_arm_y             1 3.8815e-07 128
- accel_arm_y              1 4.0310e-07 128
- pitch_arm                1 4.2025e-07 128
- num_window               1 1.3929e-06 128
<none>                       3.3791e-07 130

Step:  AIC=128
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + amplitude_roll_dumbbell +
    total_accel_dumbbell + var_roll_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + skewness_pitch_forearm
+
    min_pitch_forearm + total_accel_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                          Df   Deviance AIC
- amplitude_roll_dumbbell  1 3.3855e-07 126
- max_roll_dumbbell        1 3.3865e-07 126
- min_pitch_belt           1 3.3874e-07 126
- var_roll_dumbbell        1 3.3880e-07 126
- kurtosis_roll_arm        1 3.3885e-07 126
- skewness_pitch_forearm   1 3.3889e-07 126
- max_yaw_arm              1 3.3894e-07 126
- accel_belt_z             1 3.3906e-07 126
- min_pitch_dumbbell       1 3.3910e-07 126
- min_yaw_arm              1 3.3912e-07 126
- gyros_forearm_x          1 3.3940e-07 126
- min_pitch_forearm        1 3.3973e-07 126
- total_accel_arm          1 3.3980e-07 126
- var_yaw_forearm          1 3.3983e-07 126
- gyros_dumbbell_z         1 3.3988e-07 126
- stddev_yaw_forearm       1 3.3989e-07 126
- min_roll_arm             1 3.3999e-07 126
- max_roll_arm             1 3.4003e-07 126
- magnet_forearm_y         1 3.4014e-07 126
- magnet_belt_y            1 3.4015e-07 126
- accel_belt_x             1 3.4015e-07 126
- yaw_forearm              1 3.4077e-07 126
- gyros_arm_x              1 3.4119e-07 126
```

```
- total_accel_forearm      1 3.4121e-07 126
- roll_belt                1 3.4146e-07 126
- roll_arm                 1 3.4155e-07 126
- accel_dumbbell_y         1 3.4197e-07 126
- magnet_arm_z             1 3.4212e-07 126
- gyros_belt_z             1 3.4259e-07 126
- accel_dumbbell_z         1 3.4292e-07 126
- gyros_arm_y              1 3.4336e-07 126
- cvtd_timestamp           1 3.4339e-07 126
- magnet_arm_x             1 3.4360e-07 126
- yaw_dumbbell             1 3.4368e-07 126
- gyros_arm_z              1 3.4384e-07 126
- user_name                1 3.4475e-07 126
- accel_belt_y             1 3.4477e-07 126
- magnet_dumbbell_x        1 3.4567e-07 126
- pitch_belt               1 3.4684e-07 126
- total_accel_belt         1 3.4706e-07 126
- accel_forearm_z          1 3.4709e-07 126
- accel_forearm_x          1 3.4717e-07 126
- magnet_belt_x            1 3.4758e-07 126
- roll_dumbbell            1 3.4775e-07 126
- accel_forearm_y          1 3.4780e-07 126
- accel_arm_x              1 3.4793e-07 126
- gyros_forearm_y          1 3.4843e-07 126
- raw_timestamp_part_2     1 3.4845e-07 126
- gyros_belt_y             1 3.4878e-07 126
- accel_dumbbell_x         1 3.4893e-07 126
- pitch_forearm            1 3.4913e-07 126
- pitch_dumbbell           1 3.5032e-07 126
- total_accel_dumbbell     1 3.5071e-07 126
- raw_timestamp_part_1     1 3.5198e-07 126
- gyros_forearm_z          1 3.5660e-07 126
- magnet_belt_z            1 3.5797e-07 126
- accel_arm_z              1 3.6025e-07 126
- magnet_forearm_x         1 3.6152e-07 126
- magnet_forearm_z         1 3.7196e-07 126
- magnet_arm_y             1 3.8869e-07 126
- accel_arm_y              1 4.0290e-07 126
- pitch_arm                1 4.1974e-07 126
- num_window               1 1.5807e-06 126
<none>                       3.3830e-07 128

Step:  AIC=126
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    max_roll_dumbbell + min_pitch_dumbbell + total_accel_dumbbell +
    var_roll_dumbbell + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
```

```
    total_accel_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                         Df   Deviance AIC
- max_roll_dumbbell       1 3.3862e-07 124
- var_roll_dumbbell       1 3.3874e-07 124
- min_pitch_belt          1 3.3876e-07 124
- kurtosis_roll_arm       1 3.3892e-07 124
- skewness_pitch_forearm  1 3.3904e-07 124
- min_yaw_arm             1 3.3912e-07 124
- max_yaw_arm             1 3.3925e-07 124
- accel_belt_z            1 3.3932e-07 124
- min_pitch_dumbbell      1 3.3969e-07 124
- gyros_forearm_x         1 3.3970e-07 124
- min_pitch_forearm       1 3.3974e-07 124
- var_yaw_forearm         1 3.3990e-07 124
- stddev_yaw_forearm      1 3.3995e-07 124
- max_roll_arm            1 3.4007e-07 124
- gyros_dumbbell_z        1 3.4010e-07 124
- min_roll_arm            1 3.4011e-07 124
- total_accel_arm         1 3.4013e-07 124
- magnet_forearm_y        1 3.4028e-07 124
- accel_belt_x            1 3.4038e-07 124
- magnet_belt_y           1 3.4055e-07 124
- yaw_forearm             1 3.4122e-07 124
- total_accel_forearm     1 3.4140e-07 124
- gyros_arm_x             1 3.4143e-07 124
- roll_belt               1 3.4170e-07 124
- roll_arm                1 3.4175e-07 124
- magnet_arm_z            1 3.4238e-07 124
- accel_dumbbell_y        1 3.4253e-07 124
- gyros_belt_z            1 3.4319e-07 124
- accel_dumbbell_z        1 3.4326e-07 124
- magnet_arm_x            1 3.4379e-07 124
- gyros_arm_y             1 3.4386e-07 124
- cvtd_timestamp          1 3.4387e-07 124
- yaw_dumbbell            1 3.4400e-07 124
- gyros_arm_z             1 3.4421e-07 124
- user_name               1 3.4533e-07 124
- accel_belt_y            1 3.4552e-07 124
- magnet_dumbbell_x       1 3.4582e-07 124
- pitch_belt              1 3.4736e-07 124
- total_accel_belt        1 3.4763e-07 124
- accel_forearm_x         1 3.4770e-07 124
- accel_forearm_z         1 3.4777e-07 124
- accel_forearm_y         1 3.4796e-07 124
- magnet_belt_x           1 3.4810e-07 124
- roll_dumbbell           1 3.4834e-07 124
- accel_arm_x             1 3.4837e-07 124
- raw_timestamp_part_2    1 3.4886e-07 124
- gyros_forearm_y         1 3.4902e-07 124
- gyros_belt_y            1 3.4916e-07 124
- accel_dumbbell_x        1 3.4924e-07 124
- pitch_forearm           1 3.4963e-07 124
- pitch_dumbbell          1 3.5078e-07 124
```

```
- total_accel_dumbbell    1 3.5110e-07 124
- raw_timestamp_part_1    1 3.5249e-07 124
- gyros_forearm_z         1 3.5694e-07 124
- magnet_belt_z           1 3.5866e-07 124
- accel_arm_z             1 3.6034e-07 124
- magnet_forearm_x        1 3.6243e-07 124
- magnet_forearm_z        1 3.7262e-07 124
- magnet_arm_y            1 3.8953e-07 124
- accel_arm_y             1 4.0370e-07 124
- pitch_arm               1 4.2045e-07 124
- num_window              1 1.5816e-06 124
<none>                      3.3855e-07 126

Step:  AIC=124
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    min_pitch_belt + gyros_belt_y + gyros_belt_z + accel_belt_x +
    accel_belt_y + accel_belt_z + magnet_belt_x + magnet_belt_y +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    kurtosis_roll_arm + max_roll_arm + max_yaw_arm + min_roll_arm +
    min_yaw_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    min_pitch_dumbbell + total_accel_dumbbell + var_roll_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                        Df   Deviance AIC
- min_pitch_belt         1 3.3882e-07 122
- var_roll_dumbbell      1 3.3883e-07 122
- kurtosis_roll_arm      1 3.3894e-07 122
- skewness_pitch_forearm 1 3.3908e-07 122
- min_yaw_arm            1 3.3936e-07 122
- max_yaw_arm            1 3.3937e-07 122
- accel_belt_z           1 3.3945e-07 122
- min_pitch_dumbbell     1 3.3972e-07 122
- gyros_forearm_x        1 3.3976e-07 122
- min_pitch_forearm      1 3.3981e-07 122
- var_yaw_forearm        1 3.4008e-07 122
- gyros_dumbbell_z       1 3.4012e-07 122
- stddev_yaw_forearm     1 3.4015e-07 122
- total_accel_arm        1 3.4017e-07 122
- max_roll_arm           1 3.4028e-07 122
- min_roll_arm           1 3.4035e-07 122
- magnet_forearm_y       1 3.4039e-07 122
- accel_belt_x           1 3.4046e-07 122
- magnet_belt_y          1 3.4061e-07 122
- yaw_forearm            1 3.4127e-07 122
- gyros_arm_x            1 3.4154e-07 122
- total_accel_forearm    1 3.4155e-07 122
- roll_belt              1 3.4173e-07 122
- roll_arm               1 3.4180e-07 122
- magnet_arm_z           1 3.4246e-07 122
```

```
- accel_dumbbell_y        1 3.4255e-07 122
- gyros_belt_z            1 3.4319e-07 122
- accel_dumbbell_z        1 3.4333e-07 122
- gyros_arm_y             1 3.4385e-07 122
- magnet_arm_x            1 3.4389e-07 122
- cvtd_timestamp          1 3.4398e-07 122
- yaw_dumbbell            1 3.4401e-07 122
- gyros_arm_z             1 3.4422e-07 122
- user_name               1 3.4532e-07 122
- accel_belt_y            1 3.4561e-07 122
- magnet_dumbbell_x       1 3.4587e-07 122
- pitch_belt              1 3.4739e-07 122
- total_accel_belt        1 3.4758e-07 122
- accel_forearm_x         1 3.4784e-07 122
- accel_forearm_z         1 3.4785e-07 122
- accel_forearm_y         1 3.4813e-07 122
- magnet_belt_x           1 3.4819e-07 122
- accel_arm_x             1 3.4835e-07 122
- roll_dumbbell           1 3.4848e-07 122
- raw_timestamp_part_2    1 3.4901e-07 122
- gyros_forearm_y         1 3.4915e-07 122
- accel_dumbbell_x        1 3.4933e-07 122
- gyros_belt_y            1 3.4936e-07 122
- pitch_forearm           1 3.4964e-07 122
- pitch_dumbbell          1 3.5084e-07 122
- total_accel_dumbbell    1 3.5118e-07 122
- raw_timestamp_part_1    1 3.5247e-07 122
- gyros_forearm_z         1 3.5713e-07 122
- magnet_belt_z           1 3.5881e-07 122
- accel_arm_z             1 3.6037e-07 122
- magnet_forearm_x        1 3.6244e-07 122
- magnet_forearm_z        1 3.7250e-07 122
- magnet_arm_y            1 3.8955e-07 122
- accel_arm_y             1 4.0374e-07 122
- pitch_arm               1 4.2039e-07 122
- num_window              1 1.5841e-06 122
<none>                      3.3862e-07 124

Step:  AIC=122
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + min_pitch_dumbbell + total_accel_dumbbell
+
    var_roll_dumbbell + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    pitch_forearm + yaw_forearm + skewness_pitch_forearm + min_pitch_forearm
+
    total_accel_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z
```

	Df	Deviance	AIC
- var_roll_dumbbell	1	3.3885e-07	120
- kurtosis_roll_arm	1	3.3902e-07	120
- skewness_pitch_forearm	1	3.3919e-07	120
- max_yaw_arm	1	3.3941e-07	120
- min_yaw_arm	1	3.3942e-07	120
- accel_belt_z	1	3.3953e-07	120
- min_pitch_forearm	1	3.3982e-07	120
- gyros_forearm_x	1	3.3999e-07	120
- gyros_dumbbell_z	1	3.4034e-07	120
- min_pitch_dumbbell	1	3.4042e-07	120
- var_yaw_forearm	1	3.4042e-07	120
- min_roll_arm	1	3.4044e-07	120
- max_roll_arm	1	3.4048e-07	120
- total_accel_arm	1	3.4051e-07	120
- magnet_forearm_y	1	3.4058e-07	120
- stddev_yaw_forearm	1	3.4060e-07	120
- accel_belt_x	1	3.4064e-07	120
- magnet_belt_y	1	3.4080e-07	120
- yaw_forearm	1	3.4139e-07	120
- gyros_arm_x	1	3.4155e-07	120
- total_accel_forearm	1	3.4176e-07	120
- roll_arm	1	3.4211e-07	120
- roll_belt	1	3.4215e-07	120
- magnet_arm_z	1	3.4257e-07	120
- accel_dumbbell_y	1	3.4283e-07	120
- gyros_belt_z	1	3.4327e-07	120
- accel_dumbbell_z	1	3.4362e-07	120
- gyros_arm_y	1	3.4386e-07	120
- magnet_arm_x	1	3.4396e-07	120
- cvtd_timestamp	1	3.4405e-07	120
- gyros_arm_z	1	3.4429e-07	120
- yaw_dumbbell	1	3.4444e-07	120
- user_name	1	3.4550e-07	120
- accel_belt_y	1	3.4561e-07	120
- magnet_dumbbell_x	1	3.4615e-07	120
- pitch_belt	1	3.4752e-07	120
- total_accel_belt	1	3.4768e-07	120
- accel_forearm_z	1	3.4792e-07	120
- accel_forearm_x	1	3.4803e-07	120
- accel_forearm_y	1	3.4810e-07	120
- magnet_belt_x	1	3.4819e-07	120
- accel_arm_x	1	3.4864e-07	120
- roll_dumbbell	1	3.4882e-07	120
- gyros_forearm_y	1	3.4913e-07	120
- raw_timestamp_part_2	1	3.4914e-07	120
- gyros_belt_y	1	3.4936e-07	120
- accel_dumbbell_x	1	3.4954e-07	120
- pitch_forearm	1	3.4969e-07	120
- pitch_dumbbell	1	3.5115e-07	120
- total_accel_dumbbell	1	3.5120e-07	120
- raw_timestamp_part_1	1	3.5252e-07	120
- gyros_forearm_z	1	3.5714e-07	120
- magnet_belt_z	1	3.5896e-07	120
- accel_arm_z	1	3.6038e-07	120
- magnet_forearm_x	1	3.6249e-07	120

```
- magnet_forearm_z        1 3.7278e-07 120
- magnet_arm_y            1 3.8951e-07 120
- accel_arm_y             1 4.0411e-07 120
- pitch_arm               1 4.2032e-07 120
- num_window              1 1.5840e-06 120
<none>                      3.3882e-07 122

Step:  AIC=120
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + kurtosis_roll_arm + max_roll_arm +
    max_yaw_arm + min_roll_arm + min_yaw_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + min_pitch_dumbbell + total_accel_dumbbell
+
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                         Df   Deviance AIC
- kurtosis_roll_arm       1 3.3913e-07 118
- skewness_pitch_forearm  1 3.3930e-07 118
- min_yaw_arm             1 3.3956e-07 118
- accel_belt_z            1 3.3963e-07 118
- max_yaw_arm             1 3.3983e-07 118
- gyros_forearm_x         1 3.4008e-07 118
- min_pitch_forearm       1 3.4012e-07 118
- min_roll_arm            1 3.4041e-07 118
- max_roll_arm            1 3.4052e-07 118
- min_pitch_dumbbell      1 3.4054e-07 118
- gyros_dumbbell_z        1 3.4057e-07 118
- magnet_forearm_y        1 3.4059e-07 118
- var_yaw_forearm         1 3.4060e-07 118
- total_accel_arm         1 3.4064e-07 118
- stddev_yaw_forearm      1 3.4065e-07 118
- accel_belt_x            1 3.4067e-07 118
- magnet_belt_y           1 3.4086e-07 118
- yaw_forearm             1 3.4154e-07 118
- total_accel_forearm     1 3.4175e-07 118
- gyros_arm_x             1 3.4191e-07 118
- roll_belt               1 3.4223e-07 118
- roll_arm                1 3.4227e-07 118
- magnet_arm_z            1 3.4267e-07 118
- accel_dumbbell_y        1 3.4275e-07 118
- accel_dumbbell_z        1 3.4352e-07 118
- gyros_belt_z            1 3.4358e-07 118
- gyros_arm_y             1 3.4430e-07 118
- cvtd_timestamp          1 3.4432e-07 118
- magnet_arm_x            1 3.4433e-07 118
- yaw_dumbbell            1 3.4436e-07 118
- gyros_arm_z             1 3.4447e-07 118
```

```
- user_name               1 3.4564e-07 118
- accel_belt_y            1 3.4577e-07 118
- magnet_dumbbell_x       1 3.4620e-07 118
- pitch_belt              1 3.4762e-07 118
- total_accel_belt        1 3.4782e-07 118
- accel_forearm_x         1 3.4808e-07 118
- accel_forearm_z         1 3.4812e-07 118
- accel_forearm_y         1 3.4812e-07 118
- magnet_belt_x           1 3.4836e-07 118
- accel_arm_x             1 3.4872e-07 118
- roll_dumbbell           1 3.4876e-07 118
- raw_timestamp_part_2    1 3.4912e-07 118
- gyros_forearm_y         1 3.4924e-07 118
- gyros_belt_y            1 3.4955e-07 118
- accel_dumbbell_x        1 3.4965e-07 118
- pitch_forearm           1 3.4990e-07 118
- pitch_dumbbell          1 3.5114e-07 118
- total_accel_dumbbell    1 3.5139e-07 118
- raw_timestamp_part_1    1 3.5268e-07 118
- gyros_forearm_z         1 3.5713e-07 118
- magnet_belt_z           1 3.5893e-07 118
- accel_arm_z             1 3.6042e-07 118
- magnet_forearm_x        1 3.6264e-07 118
- magnet_forearm_z        1 3.7323e-07 118
- magnet_arm_y            1 3.8974e-07 118
- accel_arm_y             1 4.0431e-07 118
- pitch_arm               1 4.2038e-07 118
- num_window              1 1.5846e-06 118
<none>                      3.3885e-07 120

Step:  AIC=118
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + min_pitch_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z


- accel_arm_z             1 3.6042e-07 118
- magnet_forearm_x        1 3.6264e-07 118
- magnet_forearm_z        1 3.7323e-07 118
- magnet_arm_y            1 3.8974e-07 118
- accel_arm_y             1 4.0431e-07 118
- pitch_arm               1 4.2038e-07 118
- num_window              1 1.5846e-06 118
<none>                      3.3885e-07 120
```

```
Step:  AIC=118
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + min_pitch_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    skewness_pitch_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                         Df   Deviance AIC
- skewness_pitch_forearm  1 3.3950e-07 116
- min_yaw_arm             1 3.3963e-07 116
- accel_belt_z            1 3.3988e-07 116
- max_yaw_arm             1 3.3993e-07 116
- min_pitch_forearm       1 3.4025e-07 116
- gyros_forearm_x         1 3.4031e-07 116
- min_roll_arm            1 3.4047e-07 116
- max_roll_arm            1 3.4053e-07 116
- min_pitch_dumbbell      1 3.4059e-07 116
- stddev_yaw_forearm      1 3.4087e-07 116
- magnet_forearm_y        1 3.4088e-07 116
- total_accel_arm         1 3.4088e-07 116
- var_yaw_forearm         1 3.4090e-07 116
- gyros_dumbbell_z        1 3.4092e-07 116
- accel_belt_x            1 3.4103e-07 116
- magnet_belt_y           1 3.4123e-07 116
- yaw_forearm             1 3.4181e-07 116
- total_accel_forearm     1 3.4209e-07 116
- gyros_arm_x             1 3.4222e-07 116
- roll_belt               1 3.4268e-07 116
- roll_arm                1 3.4275e-07 116
- accel_dumbbell_y        1 3.4299e-07 116
- magnet_arm_z            1 3.4305e-07 116
- gyros_belt_z            1 3.4367e-07 116
- accel_dumbbell_z        1 3.4386e-07 116
- cvtd_timestamp          1 3.4449e-07 116
- yaw_dumbbell            1 3.4449e-07 116
- gyros_arm_y             1 3.4453e-07 116
- gyros_arm_z             1 3.4485e-07 116
- magnet_arm_x            1 3.4490e-07 116
- user_name               1 3.4591e-07 116
- accel_belt_y            1 3.4601e-07 116
- magnet_dumbbell_x       1 3.4656e-07 116
- total_accel_belt        1 3.4799e-07 116
- pitch_belt              1 3.4800e-07 116
- accel_forearm_z         1 3.4832e-07 116
- accel_forearm_y         1 3.4856e-07 116
- accel_forearm_x         1 3.4863e-07 116
- magnet_belt_x           1 3.4869e-07 116
```

```
- roll_dumbbell           1 3.4884e-07 116
- accel_arm_x             1 3.4885e-07 116
- raw_timestamp_part_2    1 3.4933e-07 116
- gyros_forearm_y         1 3.4948e-07 116
- accel_dumbbell_x        1 3.4997e-07 116
- gyros_belt_y            1 3.4997e-07 116
- pitch_forearm           1 3.5035e-07 116
- pitch_dumbbell          1 3.5158e-07 116
- total_accel_dumbbell    1 3.5191e-07 116
- raw_timestamp_part_1    1 3.5311e-07 116
- gyros_forearm_z         1 3.5752e-07 116
- magnet_belt_z           1 3.5922e-07 116
- accel_arm_z             1 3.6095e-07 116
- magnet_forearm_x        1 3.6297e-07 116
- magnet_forearm_z        1 3.7311e-07 116
- magnet_arm_y            1 3.9015e-07 116
- accel_arm_y             1 4.0489e-07 116
- pitch_arm               1 4.2071e-07 116
- num_window              1 1.5841e-06 116
<none>                      3.3913e-07 118

Step:  AIC=116
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + max_yaw_arm +
    min_roll_arm + min_yaw_arm + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + min_pitch_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    min_pitch_forearm + total_accel_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                       Df   Deviance AIC
- min_yaw_arm           1 3.3972e-07 114
- accel_belt_z          1 3.4012e-07 114
- max_yaw_arm           1 3.4017e-07 114
- min_pitch_forearm     1 3.4042e-07 114
- max_roll_arm          1 3.4063e-07 114
- min_roll_arm          1 3.4068e-07 114
- gyros_forearm_x       1 3.4070e-07 114
- min_pitch_dumbbell    1 3.4073e-07 114
- total_accel_arm       1 3.4093e-07 114
- gyros_dumbbell_z      1 3.4096e-07 114
- stddev_yaw_forearm    1 3.4104e-07 114
- magnet_forearm_y      1 3.4126e-07 114
- var_yaw_forearm       1 3.4127e-07 114
- accel_belt_x          1 3.4128e-07 114
- magnet_belt_y         1 3.4134e-07 114
- yaw_forearm           1 3.4217e-07 114
- total_accel_forearm   1 3.4239e-07 114
- gyros_arm_x           1 3.4240e-07 114
```

```
- roll_arm              1 3.4289e-07 114
- roll_belt             1 3.4292e-07 114
- magnet_arm_z          1 3.4310e-07 114
- accel_dumbbell_y      1 3.4310e-07 114
- gyros_belt_z          1 3.4388e-07 114
- accel_dumbbell_z      1 3.4408e-07 114
- cvtd_timestamp        1 3.4451e-07 114
- gyros_arm_y           1 3.4463e-07 114
- yaw_dumbbell          1 3.4476e-07 114
- magnet_arm_x          1 3.4488e-07 114
- gyros_arm_z           1 3.4495e-07 114
- user_name             1 3.4600e-07 114
- accel_belt_y          1 3.4607e-07 114
- magnet_dumbbell_x     1 3.4694e-07 114
- pitch_belt            1 3.4806e-07 114
- total_accel_belt      1 3.4841e-07 114
- accel_forearm_z       1 3.4842e-07 114
- accel_forearm_y       1 3.4867e-07 114
- magnet_belt_x         1 3.4878e-07 114
- accel_forearm_x       1 3.4889e-07 114
- accel_arm_x           1 3.4904e-07 114
- roll_dumbbell         1 3.4908e-07 114
- gyros_forearm_y       1 3.4949e-07 114
- raw_timestamp_part_2  1 3.4968e-07 114
- accel_dumbbell_x      1 3.4998e-07 114
- gyros_belt_y          1 3.5025e-07 114
- pitch_forearm         1 3.5051e-07 114
- pitch_dumbbell        1 3.5165e-07 114
- total_accel_dumbbell  1 3.5199e-07 114
- raw_timestamp_part_1  1 3.5317e-07 114
- gyros_forearm_z       1 3.5751e-07 114
- magnet_belt_z         1 3.5954e-07 114
- accel_arm_z           1 3.6108e-07 114
- magnet_forearm_x      1 3.6299e-07 114
- magnet_forearm_z      1 3.7314e-07 114
- magnet_arm_y          1 3.9085e-07 114
- accel_arm_y           1 4.0496e-07 114
- pitch_arm             1 4.2069e-07 114
- num_window            1 1.5862e-06 114
<none>                    3.3950e-07 116

Step:  AIC=114
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + max_yaw_arm +
    min_roll_arm + roll_dumbbell + pitch_dumbbell + yaw_dumbbell +
    min_pitch_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + min_pitch_forearm +
    total_accel_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z
```

```
                      Df   Deviance AIC
- max_yaw_arm          1 3.4041e-07 112
- accel_belt_z         1 3.4042e-07 112
- min_roll_arm         1 3.4063e-07 112
- min_pitch_forearm    1 3.4064e-07 112
- max_roll_arm         1 3.4084e-07 112
- min_pitch_dumbbell   1 3.4094e-07 112
- gyros_forearm_x      1 3.4100e-07 112
- stddev_yaw_forearm   1 3.4107e-07 112
- gyros_dumbbell_z     1 3.4128e-07 112
- total_accel_arm      1 3.4128e-07 112
- var_yaw_forearm      1 3.4139e-07 112
- magnet_forearm_y     1 3.4148e-07 112
- accel_belt_x         1 3.4152e-07 112
- magnet_belt_y        1 3.4160e-07 112
- yaw_forearm          1 3.4237e-07 112
- gyros_arm_x          1 3.4265e-07 112
- total_accel_forearm  1 3.4271e-07 112
- roll_belt            1 3.4310e-07 112
- roll_arm             1 3.4322e-07 112
- magnet_arm_z         1 3.4332e-07 112
- accel_dumbbell_y     1 3.4336e-07 112
- gyros_belt_z         1 3.4408e-07 112
- accel_dumbbell_z     1 3.4438e-07 112
- cvtd_timestamp       1 3.4487e-07 112
- gyros_arm_y          1 3.4492e-07 112
- yaw_dumbbell         1 3.4503e-07 112
- magnet_arm_x         1 3.4507e-07 112
- gyros_arm_z          1 3.4525e-07 112
- user_name            1 3.4611e-07 112
- accel_belt_y         1 3.4652e-07 112
- magnet_dumbbell_x    1 3.4714e-07 112
- pitch_belt           1 3.4820e-07 112
- total_accel_belt     1 3.4854e-07 112
- accel_forearm_z      1 3.4873e-07 112
- accel_forearm_y      1 3.4910e-07 112
- accel_forearm_x      1 3.4911e-07 112
- magnet_belt_x        1 3.4914e-07 112
- roll_dumbbell        1 3.4921e-07 112
- accel_arm_x          1 3.4946e-07 112
- raw_timestamp_part_2 1 3.4970e-07 112
- gyros_forearm_y      1 3.4976e-07 112
- accel_dumbbell_x     1 3.5024e-07 112
- pitch_forearm        1 3.5071e-07 112
- gyros_belt_y         1 3.5077e-07 112
- total_accel_dumbbell 1 3.5232e-07 112
- pitch_dumbbell       1 3.5242e-07 112
- raw_timestamp_part_1 1 3.5329e-07 112
- gyros_forearm_z      1 3.5803e-07 112
- magnet_belt_z        1 3.5985e-07 112
- accel_arm_z          1 3.6112e-07 112
- magnet_forearm_x     1 3.6306e-07 112
- magnet_forearm_z     1 3.7350e-07 112
- magnet_arm_y         1 3.9055e-07 112
- accel_arm_y          1 4.0529e-07 112
- pitch_arm            1 4.2151e-07 112
```

```
- num_window            1 1.5882e-06 112
<none>                    3.3972e-07 114

Step:  AIC=112
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + min_roll_arm +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + min_pitch_dumbbell +
    total_accel_dumbbell + gyros_dumbbell_z + accel_dumbbell_x +
    accel_dumbbell_y + accel_dumbbell_z + magnet_dumbbell_x +
    pitch_forearm + yaw_forearm + min_pitch_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                      Df   Deviance AIC
- min_roll_arm         1 3.4066e-07 110
- accel_belt_z         1 3.4078e-07 110
- max_roll_arm         1 3.4096e-07 110
- min_pitch_forearm    1 3.4100e-07 110
- min_pitch_dumbbell   1 3.4121e-07 110
- gyros_forearm_x      1 3.4167e-07 110
- stddev_yaw_forearm   1 3.4167e-07 110
- var_yaw_forearm      1 3.4201e-07 110
- total_accel_arm      1 3.4201e-07 110
- magnet_forearm_y     1 3.4204e-07 110
- magnet_belt_y        1 3.4224e-07 110
- gyros_dumbbell_z     1 3.4234e-07 110
- accel_belt_x         1 3.4238e-07 110
- yaw_forearm          1 3.4302e-07 110
- total_accel_forearm  1 3.4324e-07 110
- gyros_arm_x          1 3.4374e-07 110
- roll_arm             1 3.4409e-07 110
- roll_belt            1 3.4411e-07 110
- magnet_arm_z         1 3.4432e-07 110
- accel_dumbbell_y     1 3.4446e-07 110
- gyros_belt_z         1 3.4495e-07 110
- accel_dumbbell_z     1 3.4521e-07 110
- cvtd_timestamp       1 3.4557e-07 110
- yaw_dumbbell         1 3.4575e-07 110
- gyros_arm_z          1 3.4583e-07 110
- gyros_arm_y          1 3.4611e-07 110
- magnet_arm_x         1 3.4622e-07 110
- user_name            1 3.4722e-07 110
- accel_belt_y         1 3.4756e-07 110
- magnet_dumbbell_x    1 3.4802e-07 110
- pitch_belt           1 3.4920e-07 110
- accel_forearm_z      1 3.4934e-07 110
- total_accel_belt     1 3.4963e-07 110
- accel_arm_x          1 3.4967e-07 110
- accel_forearm_y      1 3.4982e-07 110
- magnet_belt_x        1 3.4988e-07 110
- roll_dumbbell        1 3.4994e-07 110
```

```
- accel_forearm_x       1 3.5040e-07 110
- raw_timestamp_part_2  1 3.5053e-07 110
- accel_dumbbell_x      1 3.5080e-07 110
- gyros_forearm_y       1 3.5081e-07 110
- gyros_belt_y          1 3.5132e-07 110
- pitch_forearm         1 3.5169e-07 110
- pitch_dumbbell        1 3.5313e-07 110
- total_accel_dumbbell  1 3.5315e-07 110
- raw_timestamp_part_1  1 3.5397e-07 110
- gyros_forearm_z       1 3.5862e-07 110
- magnet_belt_z         1 3.6030e-07 110
- accel_arm_z           1 3.6172e-07 110
- magnet_forearm_x      1 3.6448e-07 110
- magnet_forearm_z      1 3.7410e-07 110
- magnet_arm_y          1 3.9092e-07 110
- accel_arm_y           1 4.0517e-07 110
- pitch_arm             1 4.2176e-07 110
- num_window            1 1.5976e-06 110
<none>                    3.4041e-07 112

Step:  AIC=110
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + min_pitch_dumbbell + total_accel_dumbbell
+
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    min_pitch_forearm + total_accel_forearm + stddev_yaw_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                       Df   Deviance AIC
- min_pitch_forearm     1 3.4108e-07 108
- accel_belt_z          1 3.4121e-07 108
- min_pitch_dumbbell    1 3.4127e-07 108
- max_roll_arm          1 3.4137e-07 108
- gyros_forearm_x       1 3.4174e-07 108
- stddev_yaw_forearm    1 3.4191e-07 108
- var_yaw_forearm       1 3.4213e-07 108
- total_accel_arm       1 3.4231e-07 108
- magnet_forearm_y      1 3.4238e-07 108
- magnet_belt_y         1 3.4246e-07 108
- accel_belt_x          1 3.4248e-07 108
- gyros_dumbbell_z      1 3.4263e-07 108
- yaw_forearm           1 3.4335e-07 108
- total_accel_forearm   1 3.4348e-07 108
- gyros_arm_x           1 3.4397e-07 108
- roll_arm              1 3.4435e-07 108
- magnet_arm_z          1 3.4445e-07 108
- roll_belt             1 3.4445e-07 108
- accel_dumbbell_y      1 3.4464e-07 108
```

```
- gyros_belt_z          1 3.4494e-07 108
- accel_dumbbell_z      1 3.4557e-07 108
- cvtd_timestamp        1 3.4589e-07 108
- gyros_arm_y           1 3.4605e-07 108
- yaw_dumbbell          1 3.4608e-07 108
- magnet_arm_x          1 3.4620e-07 108
- gyros_arm_z           1 3.4656e-07 108
- user_name             1 3.4733e-07 108
- accel_belt_y          1 3.4760e-07 108
- magnet_dumbbell_x     1 3.4840e-07 108
- pitch_belt            1 3.4931e-07 108
- accel_forearm_z       1 3.4957e-07 108
- total_accel_belt      1 3.4972e-07 108
- accel_arm_x           1 3.4994e-07 108
- magnet_belt_x         1 3.4996e-07 108
- accel_forearm_y       1 3.5016e-07 108
- roll_dumbbell         1 3.5027e-07 108
- accel_forearm_x       1 3.5047e-07 108
- raw_timestamp_part_2  1 3.5109e-07 108
- gyros_forearm_y       1 3.5117e-07 108
- accel_dumbbell_x      1 3.5145e-07 108
- gyros_belt_y          1 3.5147e-07 108
- pitch_forearm         1 3.5185e-07 108
- pitch_dumbbell        1 3.5331e-07 108
- total_accel_dumbbell  1 3.5359e-07 108
- raw_timestamp_part_1  1 3.5399e-07 108
- gyros_forearm_z       1 3.5899e-07 108
- magnet_belt_z         1 3.6102e-07 108
- accel_arm_z           1 3.6228e-07 108
- magnet_forearm_x      1 3.6450e-07 108
- magnet_forearm_z      1 3.7451e-07 108
- magnet_arm_y          1 3.9098e-07 108
- accel_arm_y           1 4.0516e-07 108
- pitch_arm             1 4.2195e-07 108
- num_window            1 1.5941e-06 108
<none>                    3.4066e-07 110

Step:  AIC=108
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + min_pitch_dumbbell + total_accel_dumbbell
+
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    total_accel_forearm + stddev_yaw_forearm + var_yaw_forearm +
    gyros_forearm_x + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_y +
    magnet_forearm_z

                       Df   Deviance AIC
- min_pitch_dumbbell    1 3.4130e-07 106
- max_roll_arm          1 3.4145e-07 106
```

```
- accel_belt_z          1 3.4164e-07 106
- stddev_yaw_forearm    1 3.4202e-07 106
- gyros_forearm_x       1 3.4212e-07 106
- var_yaw_forearm       1 3.4229e-07 106
- total_accel_arm       1 3.4276e-07 106
- magnet_forearm_y      1 3.4281e-07 106
- accel_belt_x          1 3.4287e-07 106
- magnet_belt_y         1 3.4289e-07 106
- gyros_dumbbell_z      1 3.4303e-07 106
- yaw_forearm           1 3.4365e-07 106
- total_accel_forearm   1 3.4386e-07 106
- gyros_arm_x           1 3.4427e-07 106
- roll_belt             1 3.4474e-07 106
- magnet_arm_z          1 3.4487e-07 106
- roll_arm              1 3.4488e-07 106
- accel_dumbbell_y      1 3.4508e-07 106
- gyros_belt_z          1 3.4512e-07 106
- accel_dumbbell_z      1 3.4593e-07 106
- cvtd_timestamp        1 3.4629e-07 106
- magnet_arm_x          1 3.4639e-07 106
- yaw_dumbbell          1 3.4643e-07 106
- gyros_arm_y           1 3.4646e-07 106
- gyros_arm_z           1 3.4681e-07 106
- user_name             1 3.4769e-07 106
- accel_belt_y          1 3.4795e-07 106
- magnet_dumbbell_x     1 3.4847e-07 106
- pitch_belt            1 3.4954e-07 106
- accel_forearm_z       1 3.4997e-07 106
- total_accel_belt      1 3.5013e-07 106
- magnet_belt_x         1 3.5014e-07 106
- accel_forearm_y       1 3.5020e-07 106
- accel_forearm_x       1 3.5050e-07 106
- roll_dumbbell         1 3.5063e-07 106
- accel_arm_x           1 3.5079e-07 106
- raw_timestamp_part_2  1 3.5111e-07 106
- gyros_forearm_y       1 3.5129e-07 106
- gyros_belt_y          1 3.5161e-07 106
- accel_dumbbell_x      1 3.5162e-07 106
- pitch_forearm         1 3.5208e-07 106
- pitch_dumbbell        1 3.5342e-07 106
- total_accel_dumbbell  1 3.5357e-07 106
- raw_timestamp_part_1  1 3.5435e-07 106
- gyros_forearm_z       1 3.5908e-07 106
- magnet_belt_z         1 3.6109e-07 106
- accel_arm_z           1 3.6270e-07 106
- magnet_forearm_x      1 3.6478e-07 106
- magnet_forearm_z      1 3.7480e-07 106
- magnet_arm_y          1 3.9160e-07 106
- accel_arm_y           1 4.0614e-07 106
- pitch_arm             1 4.2221e-07 106
- num_window            1 1.5922e-06 106
<none>                    3.4108e-07 108

Step:  AIC=106
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
```

```
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + max_roll_arm + roll_dumbbell +
    pitch_dumbbell + yaw_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                       Df   Deviance AIC
- max_roll_arm          1 3.4146e-07 104
- accel_belt_z          1 3.4184e-07 104
- stddev_yaw_forearm    1 3.4199e-07 104
- var_yaw_forearm       1 3.4217e-07 104
- gyros_forearm_x       1 3.4239e-07 104
- gyros_dumbbell_z      1 3.4303e-07 104
- accel_belt_x          1 3.4303e-07 104
- total_accel_arm       1 3.4306e-07 104
- magnet_forearm_y      1 3.4307e-07 104
- magnet_belt_y         1 3.4309e-07 104
- yaw_forearm           1 3.4394e-07 104
- total_accel_forearm   1 3.4416e-07 104
- gyros_arm_x           1 3.4437e-07 104
- roll_belt             1 3.4489e-07 104
- roll_arm              1 3.4495e-07 104
- magnet_arm_z          1 3.4504e-07 104
- accel_dumbbell_y      1 3.4529e-07 104
- gyros_belt_z          1 3.4537e-07 104
- accel_dumbbell_z      1 3.4632e-07 104
- cvtd_timestamp        1 3.4650e-07 104
- gyros_arm_y           1 3.4652e-07 104
- magnet_arm_x          1 3.4660e-07 104
- yaw_dumbbell          1 3.4683e-07 104
- gyros_arm_z           1 3.4706e-07 104
- user_name             1 3.4784e-07 104
- accel_belt_y          1 3.4808e-07 104
- magnet_dumbbell_x     1 3.4886e-07 104
- pitch_belt            1 3.4974e-07 104
- accel_forearm_z       1 3.5025e-07 104
- total_accel_belt      1 3.5032e-07 104
- magnet_belt_x         1 3.5041e-07 104
- accel_forearm_x       1 3.5044e-07 104
- accel_forearm_y       1 3.5061e-07 104
- accel_arm_x           1 3.5090e-07 104
- roll_dumbbell         1 3.5103e-07 104
- gyros_forearm_y       1 3.5156e-07 104
- raw_timestamp_part_2  1 3.5161e-07 104
- gyros_belt_y          1 3.5192e-07 104
- accel_dumbbell_x      1 3.5205e-07 104
- pitch_forearm         1 3.5252e-07 104
- pitch_dumbbell        1 3.5383e-07 104
- total_accel_dumbbell  1 3.5401e-07 104
- raw_timestamp_part_1  1 3.5449e-07 104
- gyros_forearm_z       1 3.5926e-07 104
- magnet_belt_z         1 3.6153e-07 104
```

```
- accel_arm_z           1 3.6296e-07 104
- magnet_forearm_x      1 3.6486e-07 104
- magnet_forearm_z      1 3.7535e-07 104
- magnet_arm_y          1 3.9169e-07 104
- accel_arm_y           1 4.0662e-07 104
- pitch_arm             1 4.2245e-07 104
- num_window            1 1.5950e-06 104
<none>                    3.4130e-07 106

Step:  AIC=104
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + total_accel_forearm +
    stddev_yaw_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                       Df   Deviance AIC
- stddev_yaw_forearm    1 3.4185e-07 102
- var_yaw_forearm       1 3.4204e-07 102
- accel_belt_z          1 3.4209e-07 102
- gyros_forearm_x       1 3.4237e-07 102
- gyros_dumbbell_z      1 3.4303e-07 102
- total_accel_arm       1 3.4308e-07 102
- accel_belt_x          1 3.4317e-07 102
- magnet_belt_y         1 3.4319e-07 102
- magnet_forearm_y      1 3.4330e-07 102
- yaw_forearm           1 3.4397e-07 102
- total_accel_forearm   1 3.4419e-07 102
- gyros_arm_x           1 3.4472e-07 102
- roll_belt             1 3.4490e-07 102
- roll_arm              1 3.4498e-07 102
- accel_dumbbell_y      1 3.4525e-07 102
- magnet_arm_z          1 3.4533e-07 102
- gyros_belt_z          1 3.4549e-07 102
- accel_dumbbell_z      1 3.4630e-07 102
- cvtd_timestamp        1 3.4663e-07 102
- magnet_arm_x          1 3.4681e-07 102
- gyros_arm_y           1 3.4681e-07 102
- yaw_dumbbell          1 3.4693e-07 102
- gyros_arm_z           1 3.4702e-07 102
- accel_belt_y          1 3.4794e-07 102
- user_name             1 3.4801e-07 102
- magnet_dumbbell_x     1 3.4898e-07 102
- pitch_belt            1 3.4972e-07 102
- total_accel_belt      1 3.5031e-07 102
- accel_forearm_x       1 3.5034e-07 102
- magnet_belt_x         1 3.5051e-07 102
- accel_forearm_z       1 3.5059e-07 102
- accel_arm_x           1 3.5084e-07 102
```

```
- accel_forearm_y       1 3.5088e-07 102
- roll_dumbbell         1 3.5100e-07 102
- gyros_forearm_y       1 3.5161e-07 102
- raw_timestamp_part_2  1 3.5174e-07 102
- gyros_belt_y          1 3.5197e-07 102
- accel_dumbbell_x      1 3.5212e-07 102
- pitch_forearm         1 3.5262e-07 102
- pitch_dumbbell        1 3.5382e-07 102
- total_accel_dumbbell  1 3.5409e-07 102
- raw_timestamp_part_1  1 3.5481e-07 102
- gyros_forearm_z       1 3.5995e-07 102
- magnet_belt_z         1 3.6163e-07 102
- accel_arm_z           1 3.6326e-07 102
- magnet_forearm_x      1 3.6500e-07 102
- magnet_forearm_z      1 3.7541e-07 102
- magnet_arm_y          1 3.9176e-07 102
- accel_arm_y           1 4.0666e-07 102
- pitch_arm             1 4.2262e-07 102
- num_window            1 1.5956e-06 102
<none>                    3.4146e-07 104

Step:  AIC=102
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    accel_belt_z + magnet_belt_x + magnet_belt_y + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + total_accel_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                       Df   Deviance AIC
- accel_belt_z          1 3.4248e-07 100
- gyros_forearm_x       1 3.4317e-07 100
- accel_belt_x          1 3.4341e-07 100
- magnet_forearm_y      1 3.4363e-07 100
- magnet_belt_y         1 3.4368e-07 100
- gyros_dumbbell_z      1 3.4370e-07 100
- total_accel_arm       1 3.4394e-07 100
- yaw_forearm           1 3.4463e-07 100
- total_accel_forearm   1 3.4478e-07 100
- gyros_arm_x           1 3.4505e-07 100
- var_yaw_forearm       1 3.4534e-07 100
- roll_arm              1 3.4558e-07 100
- roll_belt             1 3.4582e-07 100
- magnet_arm_z          1 3.4583e-07 100
- accel_dumbbell_y      1 3.4586e-07 100
- gyros_belt_z          1 3.4594e-07 100
- accel_dumbbell_z      1 3.4697e-07 100
- yaw_dumbbell          1 3.4743e-07 100
- gyros_arm_y           1 3.4749e-07 100
- magnet_arm_x          1 3.4761e-07 100
```

```
- cvtd_timestamp        1 3.4766e-07 100
- gyros_arm_z           1 3.4793e-07 100
- user_name             1 3.4851e-07 100
- accel_belt_y          1 3.4906e-07 100
- magnet_dumbbell_x     1 3.4986e-07 100
- pitch_belt            1 3.5050e-07 100
- magnet_belt_x         1 3.5116e-07 100
- total_accel_belt      1 3.5116e-07 100
- accel_forearm_z       1 3.5130e-07 100
- roll_dumbbell         1 3.5149e-07 100
- accel_arm_x           1 3.5173e-07 100
- accel_forearm_y       1 3.5189e-07 100
- accel_forearm_x       1 3.5228e-07 100
- raw_timestamp_part_2  1 3.5265e-07 100
- gyros_belt_y          1 3.5265e-07 100
- accel_dumbbell_x      1 3.5308e-07 100
- pitch_forearm         1 3.5358e-07 100
- gyros_forearm_y       1 3.5379e-07 100
- pitch_dumbbell        1 3.5479e-07 100
- total_accel_dumbbell  1 3.5497e-07 100
- raw_timestamp_part_1  1 3.5573e-07 100
- gyros_forearm_z       1 3.6180e-07 100
- magnet_belt_z         1 3.6289e-07 100
- accel_arm_z           1 3.6342e-07 100
- magnet_forearm_x      1 3.6648e-07 100
- magnet_forearm_z      1 3.7624e-07 100
- magnet_arm_y          1 3.9460e-07 100
- accel_arm_y           1 4.0765e-07 100
- pitch_arm             1 4.2360e-07 100
- num_window            1 1.5996e-06 100
<none>                    3.4185e-07 102

Step:  AIC=100
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    magnet_belt_x + magnet_belt_y + magnet_belt_z + roll_arm +
    pitch_arm + total_accel_arm + gyros_arm_x + gyros_arm_y +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + magnet_arm_z + roll_dumbbell + pitch_dumbbell +
    yaw_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + accel_dumbbell_y + accel_dumbbell_z +
    magnet_dumbbell_x + pitch_forearm + yaw_forearm + total_accel_forearm +
    var_yaw_forearm + gyros_forearm_x + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                      Df   Deviance AIC
- magnet_belt_y        1 3.4346e-07  98
- accel_belt_x         1 3.4368e-07  98
- magnet_forearm_y     1 3.4384e-07  98
- gyros_forearm_x      1 3.4394e-07  98
- total_accel_arm      1 3.4395e-07  98
- gyros_dumbbell_z     1 3.4449e-07  98
- total_accel_forearm  1 3.4494e-07  98
- gyros_arm_x          1 3.4498e-07  98
- var_yaw_forearm      1 3.4531e-07  98
```

```
- yaw_forearm           1 3.4546e-07  98
- roll_arm              1 3.4590e-07  98
- magnet_arm_z          1 3.4641e-07  98
- gyros_belt_z          1 3.4644e-07  98
- accel_dumbbell_y      1 3.4682e-07  98
- magnet_arm_x          1 3.4738e-07  98
- cvtd_timestamp        1 3.4741e-07  98
- yaw_dumbbell          1 3.4767e-07  98
- accel_dumbbell_z      1 3.4784e-07  98
- gyros_arm_y           1 3.4788e-07  98
- gyros_arm_z           1 3.4835e-07  98
- accel_belt_y          1 3.4909e-07  98
- user_name             1 3.4937e-07  98
- total_accel_belt      1 3.5044e-07  98
- magnet_belt_x         1 3.5155e-07  98
- accel_forearm_z       1 3.5158e-07  98
- magnet_dumbbell_x     1 3.5161e-07  98
- accel_forearm_y       1 3.5167e-07  98
- pitch_belt            1 3.5195e-07  98
- roll_dumbbell         1 3.5206e-07  98
- accel_forearm_x       1 3.5215e-07  98
- accel_arm_x           1 3.5241e-07  98
- gyros_belt_y          1 3.5294e-07  98
- raw_timestamp_part_2  1 3.5331e-07  98
- accel_dumbbell_x      1 3.5386e-07  98
- gyros_forearm_y       1 3.5414e-07  98
- pitch_forearm         1 3.5451e-07  98
- total_accel_dumbbell  1 3.5510e-07  98
- pitch_dumbbell        1 3.5525e-07  98
- raw_timestamp_part_1  1 3.5543e-07  98
- roll_belt             1 3.5621e-07  98
- gyros_forearm_z       1 3.6251e-07  98
- magnet_belt_z         1 3.6314e-07  98
- accel_arm_z           1 3.6343e-07  98
- magnet_forearm_x      1 3.6902e-07  98
- magnet_forearm_z      1 3.7623e-07  98
- magnet_arm_y          1 3.9693e-07  98
- accel_arm_y           1 4.1548e-07  98
- pitch_arm             1 4.2769e-07  98
- num_window            1 1.7258e-06  98
<none>                    3.4248e-07 100

Step:  AIC=98
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    magnet_belt_x + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    total_accel_forearm + var_yaw_forearm + gyros_forearm_x +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                       Df   Deviance AIC
```

```
- gyros_forearm_x       1 3.4399e-07  96
- accel_belt_x          1 3.4424e-07  96
- total_accel_arm       1 3.4442e-07  96
- gyros_dumbbell_z      1 3.4494e-07  96
- magnet_forearm_y      1 3.4530e-07  96
- gyros_arm_x           1 3.4562e-07  96
- total_accel_forearm   1 3.4562e-07  96
- var_yaw_forearm       1 3.4579e-07  96
- roll_arm              1 3.4609e-07  96
- magnet_arm_z          1 3.4631e-07  96
- yaw_forearm           1 3.4632e-07  96
- accel_dumbbell_y      1 3.4660e-07  96
- gyros_belt_z          1 3.4695e-07  96
- accel_dumbbell_z      1 3.4763e-07  96
- yaw_dumbbell          1 3.4808e-07  96
- magnet_arm_x          1 3.4811e-07  96
- cvtd_timestamp        1 3.4850e-07  96
- gyros_arm_y           1 3.4853e-07  96
- accel_belt_y          1 3.4918e-07  96
- user_name             1 3.4954e-07  96
- gyros_arm_z           1 3.5131e-07  96
- magnet_belt_x         1 3.5165e-07  96
- accel_forearm_y       1 3.5198e-07  96
- accel_forearm_x       1 3.5210e-07  96
- pitch_belt            1 3.5213e-07  96
- accel_forearm_z       1 3.5254e-07  96
- total_accel_belt      1 3.5269e-07  96
- roll_dumbbell         1 3.5278e-07  96
- magnet_dumbbell_x     1 3.5316e-07  96
- accel_dumbbell_x      1 3.5345e-07  96
- gyros_forearm_y       1 3.5410e-07  96
- pitch_forearm         1 3.5428e-07  96
- total_accel_dumbbell  1 3.5484e-07  96
- raw_timestamp_part_2  1 3.5524e-07  96
- pitch_dumbbell        1 3.5542e-07  96
- gyros_belt_y          1 3.5555e-07  96
- accel_arm_x           1 3.5580e-07  96
- raw_timestamp_part_1  1 3.5618e-07  96
- roll_belt             1 3.5661e-07  96
- gyros_forearm_z       1 3.6250e-07  96
- accel_arm_z           1 3.6357e-07  96
- magnet_forearm_x      1 3.6899e-07  96
- magnet_belt_z         1 3.7538e-07  96
- magnet_forearm_z      1 3.8005e-07  96
- magnet_arm_y          1 3.9745e-07  96
- accel_arm_y           1 4.1622e-07  96
- pitch_arm             1 4.2932e-07  96
- num_window            1 1.7453e-06  96
<none>                   3.4346e-07  98

Step:  AIC=96
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_x + accel_belt_y +
    magnet_belt_x + magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
```

```
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    total_accel_forearm + var_yaw_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                       Df   Deviance AIC
- accel_belt_x          1 3.4466e-07  94
- var_yaw_forearm       1 3.4489e-07  94
- total_accel_forearm   1 3.4501e-07  94
- magnet_forearm_y      1 3.4550e-07  94
- magnet_arm_z          1 3.4650e-07  94
- gyros_dumbbell_z      1 3.4717e-07  94
- gyros_belt_z          1 3.4735e-07  94
- yaw_dumbbell          1 3.4749e-07  94
- accel_dumbbell_z      1 3.4763e-07  94
- total_accel_arm       1 3.4826e-07  94
- accel_dumbbell_y      1 3.4882e-07  94
- roll_arm              1 3.4901e-07  94
- yaw_forearm           1 3.4921e-07  94
- cvtd_timestamp        1 3.5009e-07  94
- roll_dumbbell         1 3.5200e-07  94
- magnet_arm_x          1 3.5232e-07  94
- gyros_arm_x           1 3.5299e-07  94
- accel_forearm_y       1 3.5306e-07  94
- accel_belt_y          1 3.5311e-07  94
- gyros_arm_z           1 3.5353e-07  94
- magnet_dumbbell_x     1 3.5371e-07  94
- raw_timestamp_part_2  1 3.5481e-07  94
- gyros_arm_y           1 3.5482e-07  94
- accel_arm_x           1 3.5494e-07  94
- total_accel_belt      1 3.5517e-07  94
- pitch_belt            1 3.5574e-07  94
- accel_dumbbell_x      1 3.5591e-07  94
- gyros_belt_y          1 3.5631e-07  94
- user_name             1 3.5659e-07  94
- magnet_belt_x         1 3.5699e-07  94
- pitch_forearm         1 3.5728e-07  94
- total_accel_dumbbell  1 3.5756e-07  94
- accel_forearm_x       1 3.5848e-07  94
- roll_belt             1 3.5854e-07  94
- pitch_dumbbell        1 3.5974e-07  94
- accel_forearm_z       1 3.6140e-07  94
- accel_arm_z           1 3.6616e-07  94
- raw_timestamp_part_1  1 3.7376e-07  94
- gyros_forearm_z       1 3.7938e-07  94
- magnet_belt_z         1 3.7940e-07  94
- magnet_forearm_x      1 3.8296e-07  94
- magnet_forearm_z      1 3.9236e-07  94
- magnet_arm_y          1 3.9757e-07  94
- gyros_forearm_y       1 4.0358e-07  94
- accel_arm_y           1 4.1705e-07  94
- pitch_arm             1 4.2851e-07  94
- num_window            1 1.7577e-06  94
<none>                    3.4399e-07  96
```

```
Step:  AIC=94
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_y + magnet_belt_x +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    total_accel_forearm + var_yaw_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

                      Df   Deviance AIC
- var_yaw_forearm       1 3.4495e-07  92
- total_accel_forearm   1 3.4566e-07  92
- magnet_forearm_y      1 3.4634e-07  92
- magnet_arm_z          1 3.4673e-07  92
- yaw_dumbbell          1 3.4767e-07  92
- accel_dumbbell_z      1 3.4782e-07  92
- accel_dumbbell_y      1 3.4888e-07  92
- gyros_dumbbell_z      1 3.4896e-07  92
- gyros_belt_z          1 3.4908e-07  92
- total_accel_arm       1 3.4923e-07  92
- roll_arm              1 3.4939e-07  92
- yaw_forearm           1 3.4981e-07  92
- cvtd_timestamp        1 3.5061e-07  92
- roll_dumbbell         1 3.5203e-07  92
- magnet_arm_x          1 3.5240e-07  92
- gyros_arm_x           1 3.5292e-07  92
- accel_forearm_y       1 3.5308e-07  92
- accel_belt_y          1 3.5348e-07  92
- magnet_dumbbell_x     1 3.5383e-07  92
- raw_timestamp_part_2  1 3.5486e-07  92
- gyros_arm_y           1 3.5486e-07  92
- pitch_belt            1 3.5577e-07  92
- gyros_arm_z           1 3.5583e-07  92
- accel_arm_x           1 3.5636e-07  92
- user_name             1 3.5651e-07  92
- magnet_belt_x         1 3.5700e-07  92
- gyros_belt_y          1 3.5700e-07  92
- total_accel_belt      1 3.5707e-07  92
- accel_dumbbell_x      1 3.5710e-07  92
- total_accel_dumbbell  1 3.5748e-07  92
- pitch_forearm         1 3.5843e-07  92
- accel_forearm_x       1 3.5928e-07  92
- roll_belt             1 3.5938e-07  92
- accel_forearm_z       1 3.6154e-07  92
- pitch_dumbbell        1 3.6154e-07  92
- accel_arm_z           1 3.6693e-07  92
- raw_timestamp_part_1  1 3.7459e-07  92
- magnet_belt_z         1 3.7942e-07  92
- gyros_forearm_z       1 3.8027e-07  92
- magnet_forearm_x      1 3.8327e-07  92
- magnet_arm_y          1 3.9812e-07  92
- magnet_forearm_z      1 4.0119e-07  92
```

```
- gyros_forearm_y       1 4.0381e-07  92
- accel_arm_y           1 4.1698e-07  92
- pitch_arm             1 4.2840e-07  92
- num_window            1 1.8004e-06  92
<none>                    3.4466e-07  94

Step:  AIC=92
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_y + magnet_belt_x +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    total_accel_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_y + magnet_forearm_z

                      Df   Deviance AIC
- total_accel_forearm   1 3.4599e-07  90
- magnet_forearm_y      1 3.4651e-07  90
- accel_dumbbell_z      1 3.4659e-07  90
- yaw_dumbbell          1 3.4718e-07  90
- magnet_arm_z          1 3.4786e-07  90
- total_accel_arm       1 3.4857e-07  90
- gyros_dumbbell_z      1 3.4859e-07  90
- accel_dumbbell_y      1 3.4892e-07  90
- cvtd_timestamp        1 3.4945e-07  90
- gyros_belt_z          1 3.4953e-07  90
- yaw_forearm           1 3.5023e-07  90
- roll_arm              1 3.5050e-07  90
- roll_dumbbell         1 3.5213e-07  90
- accel_belt_y          1 3.5281e-07  90
- accel_forearm_y       1 3.5326e-07  90
- gyros_arm_x           1 3.5398e-07  90
- magnet_arm_x          1 3.5425e-07  90
- gyros_arm_y           1 3.5530e-07  90
- magnet_dumbbell_x     1 3.5538e-07  90
- gyros_arm_z           1 3.5620e-07  90
- raw_timestamp_part_2  1 3.5661e-07  90
- accel_arm_x           1 3.5672e-07  90
- accel_dumbbell_x      1 3.5675e-07  90
- gyros_belt_y          1 3.5676e-07  90
- magnet_belt_x         1 3.5706e-07  90
- user_name             1 3.5711e-07  90
- total_accel_belt      1 3.5727e-07  90
- pitch_belt            1 3.5732e-07  90
- total_accel_dumbbell  1 3.5735e-07  90
- accel_forearm_x       1 3.5858e-07  90
- pitch_forearm         1 3.5870e-07  90
- pitch_dumbbell        1 3.6130e-07  90
- accel_forearm_z       1 3.6248e-07  90
- roll_belt             1 3.6253e-07  90
- accel_arm_z           1 3.6622e-07  90
- raw_timestamp_part_1  1 3.7472e-07  90
```

```
- magnet_belt_z         1 3.7930e-07  90
- gyros_forearm_z       1 3.8018e-07  90
- magnet_forearm_x      1 3.8329e-07  90
- magnet_arm_y          1 3.9768e-07  90
- magnet_forearm_z      1 4.0117e-07  90
- gyros_forearm_y       1 4.0367e-07  90
- accel_arm_y           1 4.1597e-07  90
- pitch_arm             1 4.2931e-07  90
- num_window            1 1.8155e-06  90
<none>                    3.4495e-07  92

Step:  AIC=90
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    cvtd_timestamp + num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + gyros_belt_z + accel_belt_y + magnet_belt_x +
    magnet_belt_z + roll_arm + pitch_arm + total_accel_arm +
    gyros_arm_x + gyros_arm_y + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + magnet_arm_z +
    roll_dumbbell + pitch_dumbbell + yaw_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + accel_dumbbell_y +
    accel_dumbbell_z + magnet_dumbbell_x + pitch_forearm + yaw_forearm +
    gyros_forearm_y + gyros_forearm_z + accel_forearm_x + accel_forearm_y +
    accel_forearm_z + magnet_forearm_x + magnet_forearm_y + magnet_forearm_z

- roll_dumbbell         1     0.00  70.00
- accel_belt_y          1     0.00  70.00
- magnet_belt_x         1     0.00  70.00
- gyros_dumbbell_z      1     0.00  70.00
- pitch_belt            1     0.00  70.00
- raw_timestamp_part_2  1     0.00  70.00
- user_name             1     0.00  70.00
- pitch_forearm         1     0.00  70.00
- magnet_arm_x          1     0.00  70.00
- total_accel_arm       1     0.00  70.00
- accel_forearm_z       1     0.00  70.00
- accel_arm_x           1     0.00  70.00
- total_accel_belt      1     0.00  70.00
- roll_belt             1     0.00  70.00
- pitch_dumbbell        1     0.00  70.00
- accel_arm_z           1     0.00  70.00
- accel_dumbbell_x      1     0.00  70.00
- magnet_belt_z         1     0.00  70.00
- magnet_dumbbell_x     1     0.00  70.00
- gyros_arm_z           1     0.00  70.00
- accel_forearm_x       1     0.00  70.00
- accel_forearm_y       1     0.00  70.00
- total_accel_dumbbell  1     0.00  70.00
- magnet_forearm_x      1     0.00  70.00
- gyros_forearm_z       1     0.00  70.00
```

```
- magnet_forearm_z      1     0.00  70.00
- raw_timestamp_part_1  1     0.00  70.00
- gyros_forearm_y       1     0.00  70.00
- magnet_arm_y          1     0.00  70.00
- pitch_arm             1     0.00  70.00
- accel_arm_y           1     0.00  70.00
<none>                        0.00  72.00
- num_window            1   349.23 419.23

Step:  AIC=70
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    num_window + roll_belt + pitch_belt + total_accel_belt +
    gyros_belt_y + accel_belt_y + magnet_belt_x + magnet_belt_z +
    roll_arm + pitch_arm + total_accel_arm + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    roll_dumbbell + pitch_dumbbell + total_accel_dumbbell + gyros_dumbbell_z
+
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_z

                      Df Deviance    AIC
- gyros_belt_y         1     0.00  68.00
- roll_arm             1     0.00  68.00
- roll_dumbbell        1     0.00  68.00
- accel_belt_y         1     0.00  68.00
- magnet_belt_x        1     0.00  68.00
- raw_timestamp_part_2 1     0.00  68.00
- gyros_dumbbell_z     1     0.00  68.00
- pitch_belt           1     0.00  68.00
- pitch_forearm        1     0.00  68.00
- user_name            1     0.00  68.00
- accel_forearm_z      1     0.00  68.00
- magnet_arm_x         1     0.00  68.00
- total_accel_belt     1     0.00  68.00
- total_accel_arm      1     0.00  68.00
- accel_arm_x          1     0.00  68.00
- roll_belt            1     0.00  68.00
- pitch_dumbbell       1     0.00  68.00
- accel_dumbbell_x     1     0.00  68.00
- accel_arm_z          1     0.00  68.00
- magnet_belt_z        1     0.00  68.00
- magnet_dumbbell_x    1     0.00  68.00
- total_accel_dumbbell 1     0.00  68.00
- gyros_arm_z          1     0.00  68.00
- accel_forearm_y      1     0.00  68.00
- accel_forearm_x      1     0.00  68.00
- magnet_forearm_x     1     0.00  68.00
- gyros_forearm_z      1     0.00  68.00
- magnet_forearm_z     1     0.00  68.00
- raw_timestamp_part_1 1     0.00  68.00
- gyros_forearm_y      1     0.00  68.00
- pitch_arm            1     0.00  68.00
- accel_arm_y          1     0.00  68.00
- magnet_arm_y         1     0.00  68.00
<none>                       0.00  70.00
- num_window           1   356.37 424.37
```

```
Step:  AIC=68
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    num_window + roll_belt + pitch_belt + total_accel_belt +
    accel_belt_y + magnet_belt_x + magnet_belt_z + roll_arm +
    pitch_arm + total_accel_arm + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    roll_dumbbell + pitch_dumbbell + total_accel_dumbbell + gyros_dumbbell_z
+
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_z

                      Df Deviance    AIC
- roll_arm             1     0.00  66.00
- accel_belt_y         1     0.00  66.00
- roll_dumbbell        1     0.00  66.00
- magnet_belt_x        1     0.00  66.00
- gyros_dumbbell_z     1     0.00  66.00
- pitch_belt           1     0.00  66.00
- raw_timestamp_part_2 1     0.00  66.00
- user_name            1     0.00  66.00
- pitch_forearm        1     0.00  66.00
- magnet_arm_x         1     0.00  66.00
- accel_forearm_z      1     0.00  66.00
- total_accel_arm      1     0.00  66.00
- accel_arm_x          1     0.00  66.00
- total_accel_belt     1     0.00  66.00
- pitch_dumbbell       1     0.00  66.00
- roll_belt            1     0.00  66.00
- accel_arm_z          1     0.00  66.00
- accel_dumbbell_x     1     0.00  66.00
- magnet_belt_z        1     0.00  66.00
- magnet_dumbbell_x    1     0.00  66.00
- gyros_arm_z          1     0.00  66.00
- accel_forearm_y      1     0.00  66.00
- total_accel_dumbbell 1     0.00  66.00
- accel_forearm_x      1     0.00  66.00
- magnet_forearm_x     1     0.00  66.00
- gyros_forearm_z      1     0.00  66.00
- magnet_forearm_z     1     0.00  66.00
- raw_timestamp_part_1 1     0.00  66.00
- gyros_forearm_y      1     0.00  66.00
- pitch_arm            1     0.00  66.00
- accel_arm_y          1     0.00  66.00
- magnet_arm_y         1     0.00  66.00
<none>                       0.00  68.00
- num_window           1   364.03 430.03

Step:  AIC=66
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    num_window + roll_belt + pitch_belt + total_accel_belt +
    accel_belt_y + magnet_belt_x + magnet_belt_z + pitch_arm +
    total_accel_arm + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + roll_dumbbell +
    pitch_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
```

```
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_z

                       Df Deviance    AIC
- accel_belt_y          1     0.00  64.00
- raw_timestamp_part_2  1     0.00  64.00
- roll_dumbbell         1     0.00  64.00
- magnet_belt_x         1     0.00  64.00
- pitch_belt            1     0.00  64.00
- user_name             1     0.00  64.00
- pitch_forearm         1     0.00  64.00
- accel_forearm_z       1     0.00  64.00
- magnet_arm_x          1     0.00  64.00
- accel_arm_x           1     0.00  64.00
- total_accel_arm       1     0.00  64.00
- gyros_dumbbell_z      1     0.00  64.00
- pitch_dumbbell        1     0.00  64.00
- total_accel_belt      1     0.00  64.00
- roll_belt             1     0.00  64.00
- magnet_belt_z         1     0.00  64.00
- accel_dumbbell_x      1     0.00  64.00
- accel_arm_z           1     0.00  64.00
- magnet_dumbbell_x     1     0.00  64.00
- total_accel_dumbbell  1     0.00  64.00
- accel_forearm_y       1     0.00  64.00
- accel_forearm_x       1     0.00  64.00
- magnet_forearm_x      1     0.00  64.00
- gyros_arm_z           1     0.00  64.00
- gyros_forearm_z       1     0.00  64.00
- raw_timestamp_part_1  1     0.00  64.00
- magnet_forearm_z      1     0.00  64.00
- gyros_forearm_y       1     0.00  64.00
- pitch_arm             1     0.00  64.00
- accel_arm_y           1     0.00  64.00
- magnet_arm_y          1     0.00  64.00
<none>                        0.00  66.00
- num_window            1   364.24 428.24

Step:  AIC=64
classe ~ user_name + raw_timestamp_part_1 + raw_timestamp_part_2 +
    num_window + roll_belt + pitch_belt + total_accel_belt +
    magnet_belt_x + magnet_belt_z + pitch_arm + total_accel_arm +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + roll_dumbbell + pitch_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_z

                       Df Deviance    AIC
- raw_timestamp_part_2  1     0.00  62.00
- magnet_belt_x         1     0.00  62.00
- roll_dumbbell         1     0.00  62.00
- pitch_belt            1     0.00  62.00
- pitch_forearm         1     0.00  62.00
- user_name             1     0.00  62.00
- accel_arm_x           1     0.00  62.00
- magnet_arm_x          1     0.00  62.00
```

```
- total_accel_arm       1     0.00  62.00
- accel_forearm_z       1     0.00  62.00
- total_accel_belt      1     0.00  62.00
- pitch_dumbbell        1     0.00  62.00
- gyros_dumbbell_z      1     0.00  62.00
- roll_belt             1     0.00  62.00
- magnet_belt_z         1     0.00  62.00
- accel_arm_z           1     0.00  62.00
- total_accel_dumbbell  1     0.00  62.00
- accel_dumbbell_x      1     0.00  62.00
- accel_forearm_y       1     0.00  62.00
- accel_forearm_x       1     0.00  62.00
- magnet_dumbbell_x     1     0.00  62.00
- magnet_forearm_x      1     0.00  62.00
- gyros_arm_z           1     0.00  62.00
- gyros_forearm_z       1     0.00  62.00
- raw_timestamp_part_1  1     0.00  62.00
- magnet_forearm_z      1     0.00  62.00
- gyros_forearm_y       1     0.00  62.00
- pitch_arm             1     0.00  62.00
- accel_arm_y           1     0.00  62.00
- magnet_arm_y          1     0.00  62.00
<none>                        0.00  64.00
- num_window            1   379.83 441.83

Step:  AIC=62
classe ~ user_name + raw_timestamp_part_1 + num_window + roll_belt +
    pitch_belt + total_accel_belt + magnet_belt_x + magnet_belt_z +
    pitch_arm + total_accel_arm + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_x + magnet_arm_y +
    roll_dumbbell + pitch_dumbbell + total_accel_dumbbell + gyros_dumbbell_z
+
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_z

                      Df Deviance   AIC
- pitch_belt           1      0.0  60.0
- roll_dumbbell        1      0.0  60.0
- user_name            1      0.0  60.0
- magnet_belt_x        1      0.0  60.0
- pitch_forearm        1      0.0  60.0
- total_accel_belt     1      0.0  60.0
- magnet_arm_x         1      0.0  60.0
- accel_forearm_z      1      0.0  60.0
- pitch_dumbbell       1      0.0  60.0
- accel_arm_x          1      0.0  60.0
- total_accel_arm      1      0.0  60.0
- roll_belt            1      0.0  60.0
- magnet_belt_z        1      0.0  60.0
- total_accel_dumbbell 1      0.0  60.0
- accel_dumbbell_x     1      0.0  60.0
- gyros_dumbbell_z     1      0.0  60.0
- accel_arm_z          1      0.0  60.0
- magnet_dumbbell_x    1      0.0  60.0
- magnet_forearm_x     1      0.0  60.0
- accel_forearm_x      1      0.0  60.0
```

```
- gyros_arm_z           1      0.0  60.0
- accel_forearm_y       1      0.0  60.0
- raw_timestamp_part_1  1      0.0  60.0
- gyros_forearm_z       1      0.0  60.0
- magnet_forearm_z      1      0.0  60.0
- gyros_forearm_y       1      0.0  60.0
- pitch_arm             1      0.0  60.0
- accel_arm_y           1      0.0  60.0
- magnet_arm_y          1      0.0  60.0
<none>                         0.0  62.0
- num_window            1    384.5 444.5

Step:  AIC=60
classe ~ user_name + raw_timestamp_part_1 + num_window + roll_belt +
    total_accel_belt + magnet_belt_x + magnet_belt_z + pitch_arm +
    total_accel_arm + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_x + magnet_arm_y + roll_dumbbell +
    pitch_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_z

                      Df Deviance    AIC
- user_name             1     0.00  58.00
- magnet_belt_x         1     0.00  58.00
- roll_dumbbell         1     0.00  58.00
- total_accel_belt      1     0.00  58.00
- pitch_dumbbell        1     0.00  58.00
- magnet_arm_x          1     0.00  58.00
- pitch_forearm         1     0.00  58.00
- accel_forearm_z       1     0.00  58.00
- magnet_belt_z         1     0.00  58.00
- total_accel_arm       1     0.00  58.00
- accel_dumbbell_x      1     0.00  58.00
- accel_arm_x           1     0.00  58.00
- total_accel_dumbbell  1     0.00  58.00
- roll_belt             1     0.00  58.00
- gyros_dumbbell_z      1     0.00  58.00
- magnet_forearm_x      1     0.00  58.00
- magnet_dumbbell_x     1     0.00  58.00
- accel_forearm_x       1     0.00  58.00
- accel_arm_z           1     0.00  58.00
- accel_forearm_y       1     0.00  58.00
- gyros_arm_z           1     0.00  58.00
- raw_timestamp_part_1  1     0.00  58.00
- gyros_forearm_z       1     0.00  58.00
- magnet_forearm_z      1     0.00  58.00
- gyros_forearm_y       1     0.00  58.00
- pitch_arm             1     0.00  58.00
- accel_arm_y           1     0.00  58.00
- magnet_arm_y          1     0.00  58.00
<none>                        0.00  60.00
- num_window            1   559.11 617.11

Step:  AIC=58
classe ~ raw_timestamp_part_1 + num_window + roll_belt + total_accel_belt +
    magnet_belt_x + magnet_belt_z + pitch_arm + total_accel_arm +
```

```
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + roll_dumbbell + pitch_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_z

                       Df Deviance    AIC
- magnet_belt_x         1     0.00  56.00
- roll_dumbbell         1     0.00  56.00
- pitch_forearm         1     0.00  56.00
- accel_forearm_z       1     0.00  56.00
- pitch_dumbbell        1     0.00  56.00
- magnet_belt_z         1     0.00  56.00
- magnet_arm_x          1     0.00  56.00
- total_accel_belt      1     0.00  56.00
- total_accel_arm       1     0.00  56.00
- accel_arm_x           1     0.00  56.00
- gyros_dumbbell_z      1     0.00  56.00
- roll_belt             1     0.00  56.00
- magnet_forearm_x      1     0.00  56.00
- accel_forearm_y       1     0.00  56.00
- accel_arm_z           1     0.00  56.00
- accel_dumbbell_x      1     0.00  56.00
- accel_forearm_x       1     0.00  56.00
- raw_timestamp_part_1  1     0.00  56.00
- total_accel_dumbbell  1     0.00  56.00
- gyros_arm_z           1     0.00  56.00
- gyros_forearm_z       1     0.00  56.00
- magnet_forearm_z      1     0.00  56.00
- magnet_dumbbell_x     1     0.00  56.00
- gyros_forearm_y       1     0.00  56.00
- accel_arm_y           1     0.00  56.00
- pitch_arm             1     0.00  56.00
- magnet_arm_y          1     0.00  56.00
<none>                        0.00  58.00
- num_window            1   873.48 929.48

Step:  AIC=56
classe ~ raw_timestamp_part_1 + num_window + roll_belt + total_accel_belt +
    magnet_belt_z + pitch_arm + total_accel_arm + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + roll_dumbbell + pitch_dumbbell + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + accel_forearm_z + magnet_forearm_x + magnet_forearm_z

                       Df Deviance    AIC
- roll_dumbbell         1     0.00   54.0
- pitch_forearm         1     0.00   54.0
- magnet_belt_z         1     0.00   54.0
- magnet_arm_x          1     0.00   54.0
- accel_forearm_z       1     0.00   54.0
- pitch_dumbbell        1     0.00   54.0
- total_accel_belt      1     0.00   54.0
- accel_arm_x           1     0.00   54.0
- total_accel_arm       1     0.00   54.0
- gyros_dumbbell_z      1     0.00   54.0
```

```
- roll_belt             1     0.00   54.0
- magnet_forearm_x      1     0.00   54.0
- accel_forearm_y       1     0.00   54.0
- accel_arm_z           1     0.00   54.0
- accel_dumbbell_x      1     0.00   54.0
- accel_forearm_x       1     0.00   54.0
- total_accel_dumbbell  1     0.00   54.0
- gyros_forearm_z       1     0.00   54.0
- gyros_arm_z           1     0.00   54.0
- magnet_forearm_z      1     0.00   54.0
- magnet_dumbbell_x     1     0.00   54.0
- gyros_forearm_y       1     0.00   54.0
- raw_timestamp_part_1  1     0.00   54.0
- accel_arm_y           1     0.00   54.0
- pitch_arm             1     0.00   54.0
- magnet_arm_y          1     0.00   54.0
<none>                        0.00   56.0
- num_window            1   995.31 1049.3

Step:  AIC=54
classe ~ raw_timestamp_part_1 + num_window + roll_belt + total_accel_belt +
    magnet_belt_z + pitch_arm + total_accel_arm + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + pitch_dumbbell + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_z

                      Df Deviance  AIC
- pitch_dumbbell       1        0   52
- magnet_arm_x         1        0   52
- pitch_forearm        1        0   52
- accel_forearm_z      1        0   52
- total_accel_belt     1        0   52
- magnet_belt_z        1        0   52
- gyros_dumbbell_z     1        0   52
- total_accel_arm      1        0   52
- accel_arm_x          1        0   52
- roll_belt            1        0   52
- magnet_forearm_x     1        0   52
- accel_forearm_y      1        0   52
- accel_dumbbell_x     1        0   52
- accel_forearm_x      1        0   52
- accel_arm_z          1        0   52
- total_accel_dumbbell 1        0   52
- gyros_forearm_z      1        0   52
- magnet_forearm_z     1        0   52
- gyros_arm_z          1        0   52
- magnet_dumbbell_x    1        0   52
- gyros_forearm_y      1        0   52
- raw_timestamp_part_1 1        0   52
- pitch_arm            1        0   52
- accel_arm_y          1        0   52
- magnet_arm_y         1        0   52
<none>                            0   54
- num_window           1     1062 1114
```

```
Step:  AIC=52
classe ~ raw_timestamp_part_1 + num_window + roll_belt + total_accel_belt +
    magnet_belt_z + pitch_arm + total_accel_arm + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_x +
    magnet_arm_y + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + accel_forearm_z +
    magnet_forearm_x + magnet_forearm_z

                       Df Deviance    AIC
- magnet_arm_x          1      0.0   50.0
- accel_forearm_z       1      0.0   50.0
- total_accel_belt      1      0.0   50.0
- magnet_belt_z         1      0.0   50.0
- gyros_dumbbell_z      1      0.0   50.0
- pitch_forearm         1      0.0   50.0
- total_accel_arm       1      0.0   50.0
- accel_arm_x           1      0.0   50.0
- accel_forearm_y       1      0.0   50.0
- roll_belt             1      0.0   50.0
- accel_arm_z           1      0.0   50.0
- accel_dumbbell_x      1      0.0   50.0
- magnet_forearm_x      1      0.0   50.0
- accel_forearm_x       1      0.0   50.0
- gyros_arm_z           1      0.0   50.0
- gyros_forearm_z       1      0.0   50.0
- magnet_forearm_z      1      0.0   50.0
- total_accel_dumbbell  1      0.0   50.0
- raw_timestamp_part_1  1      0.0   50.0
- gyros_forearm_y       1      0.0   50.0
- magnet_dumbbell_x     1      0.0   50.0
- pitch_arm             1      0.0   50.0
- magnet_arm_y          1      0.0   50.0
- accel_arm_y           1      0.0   50.0
<none>                         0.0   52.0
- num_window            1   1141.6 1191.6

Step:  AIC=50
classe ~ raw_timestamp_part_1 + num_window + roll_belt + total_accel_belt +
    magnet_belt_z + pitch_arm + total_accel_arm + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_y +
    total_accel_dumbbell + gyros_dumbbell_z + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + accel_forearm_z + magnet_forearm_x +
    magnet_forearm_z

                       Df Deviance    AIC
- accel_forearm_z       1      0.0   48.0
- magnet_belt_z         1      0.0   48.0
- total_accel_belt      1      0.0   48.0
- accel_forearm_y       1      0.0   48.0
- gyros_dumbbell_z      1      0.0   48.0
- accel_dumbbell_x      1      0.0   48.0
- accel_forearm_x       1      0.0   48.0
- total_accel_arm       1      0.0   48.0
- roll_belt             1      0.0   48.0
- magnet_forearm_x      1      0.0   48.0
```

```
- pitch_forearm         1      0.0   48.0
- magnet_forearm_z      1      0.0   48.0
- gyros_forearm_z       1      0.0   48.0
- total_accel_dumbbell  1      0.0   48.0
- raw_timestamp_part_1  1      0.0   48.0
- accel_arm_z           1      0.0   48.0
- gyros_arm_z           1      0.0   48.0
- gyros_forearm_y       1      0.0   48.0
- magnet_dumbbell_x     1      0.0   48.0
- magnet_arm_y          1      0.0   48.0
- pitch_arm             1      0.0   48.0
- accel_arm_y           1      0.0   48.0
- accel_arm_x           1      0.0   48.0
<none>                         0.0   50.0
- num_window            1   1156.8 1204.8

Step:  AIC=48
classe ~ raw_timestamp_part_1 + num_window + roll_belt + total_accel_belt +
    magnet_belt_z + pitch_arm + total_accel_arm + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_y +
    total_accel_dumbbell + gyros_dumbbell_z + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + magnet_forearm_x + magnet_forearm_z

                       Df Deviance    AIC
- total_accel_belt      1      0.0   46.0
- accel_forearm_y       1      0.0   46.0
- gyros_dumbbell_z      1      0.0   46.0
- magnet_belt_z         1      0.0   46.0
- total_accel_arm       1      0.0   46.0
- roll_belt             1      0.0   46.0
- accel_dumbbell_x      1      0.0   46.0
- pitch_forearm         1      0.0   46.0
- accel_forearm_x       1      0.0   46.0
- magnet_forearm_x      1      0.0   46.0
- magnet_forearm_z      1      0.0   46.0
- total_accel_dumbbell  1      0.0   46.0
- gyros_forearm_z       1      0.0   46.0
- accel_arm_z           1      0.0   46.0
- gyros_forearm_y       1      0.0   46.0
- gyros_arm_z           1      0.0   46.0
- magnet_dumbbell_x     1      0.0   46.0
- magnet_arm_y          1      0.0   46.0
- pitch_arm             1      0.0   46.0
- accel_arm_y           1      0.0   46.0
- accel_arm_x           1      0.0   46.0
- raw_timestamp_part_1  1      0.0   46.0
<none>                         0.0   48.0
- num_window            1   1220.2 1266.2

Step:  AIC=46
classe ~ raw_timestamp_part_1 + num_window + roll_belt + magnet_belt_z +
    pitch_arm + total_accel_arm + gyros_arm_z + accel_arm_x +
    accel_arm_y + accel_arm_z + magnet_arm_y + total_accel_dumbbell +
    gyros_dumbbell_z + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + magnet_forearm_x + magnet_forearm_z
```

```
                       Df Deviance    AIC
- magnet_belt_z         1      0.0   44.0
- accel_forearm_y       1      0.0   44.0
- gyros_dumbbell_z      1      0.0   44.0
- roll_belt             1      0.0   44.0
- total_accel_arm       1      0.0   44.0
- pitch_forearm         1      0.0   44.0
- accel_forearm_x       1      0.0   44.0
- accel_dumbbell_x      1      0.0   44.0
- magnet_forearm_x      1      0.0   44.0
- magnet_forearm_z      1      0.0   44.0
- total_accel_dumbbell  1      0.0   44.0
- gyros_forearm_z       1      0.0   44.0
- accel_arm_z           1      0.0   44.0
- gyros_arm_z           1      0.0   44.0
- magnet_dumbbell_x     1      0.0   44.0
- gyros_forearm_y       1      0.0   44.0
- pitch_arm             1      0.0   44.0
- magnet_arm_y          1      0.0   44.0
- accel_arm_y           1      0.0   44.0
- accel_arm_x           1      0.0   44.0
- raw_timestamp_part_1  1      0.0   44.0
<none>                         0.0   46.0
- num_window            1   1270.6 1314.6

Step:  AIC=44
classe ~ raw_timestamp_part_1 + num_window + roll_belt + pitch_arm +
    total_accel_arm + gyros_arm_z + accel_arm_x + accel_arm_y +
    accel_arm_z + magnet_arm_y + total_accel_dumbbell + gyros_dumbbell_z +
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + accel_forearm_y + magnet_forearm_x +
    magnet_forearm_z

                       Df Deviance     AIC
- roll_belt             1     0.00   42.00
- gyros_dumbbell_z      1     0.00   42.00
- accel_forearm_y       1     0.00   42.00
- total_accel_arm       1     0.00   42.00
- pitch_forearm         1     0.00   42.00
- magnet_forearm_x      1     0.00   42.00
- accel_forearm_x       1     0.00   42.00
- accel_dumbbell_x      1     0.00   42.00
- magnet_forearm_z      1     0.00   42.00
- total_accel_dumbbell  1     0.00   42.00
- accel_arm_z           1     0.00   42.00
- gyros_forearm_z       1     0.00   42.00
- gyros_arm_z           1     0.00   42.00
- magnet_dumbbell_x     1     0.00   42.00
- pitch_arm             1     0.00   42.00
- gyros_forearm_y       1     0.00   42.00
- magnet_arm_y          1     0.00   42.00
- accel_arm_y           1     0.00   42.00
- accel_arm_x           1     0.00   42.00
<none>                         0.00   44.00
- raw_timestamp_part_1  1   198.61  240.61
- num_window            1  1505.12 1547.12
```

```
Step:  AIC=42
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + total_accel_arm +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_y +
    total_accel_dumbbell + gyros_dumbbell_z + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + accel_forearm_y + magnet_forearm_x + magnet_forearm_z

                       Df Deviance     AIC
- gyros_dumbbell_z      1     0.00   40.00
- total_accel_arm       1     0.00   40.00
- accel_forearm_y       1     0.00   40.00
- accel_dumbbell_x      1     0.00   40.00
- pitch_forearm         1     0.00   40.00
- total_accel_dumbbell  1     0.00   40.00
- accel_forearm_x       1     0.00   40.00
- magnet_forearm_x      1     0.00   40.00
- magnet_forearm_z      1     0.00   40.00
- gyros_forearm_z       1     0.00   40.00
- accel_arm_z           1     0.00   40.00
- gyros_arm_z           1     0.00   40.00
- pitch_arm             1     0.00   40.00
- accel_arm_y           1     0.00   40.00
- gyros_forearm_y       1     0.00   40.00
- magnet_arm_y          1     0.00   40.00
- accel_arm_x           1     0.00   40.00
- magnet_dumbbell_x     1     0.00   40.00
<none>                        0.00   42.00
- raw_timestamp_part_1  1   262.96  302.96
- num_window            1  1799.43 1839.43

Step:  AIC=40
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + total_accel_arm +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_y +
    total_accel_dumbbell + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    accel_forearm_y + magnet_forearm_x + magnet_forearm_z

                       Df Deviance     AIC
- accel_forearm_y       1     0.00   38.00
- total_accel_arm       1     0.00   38.00
- pitch_forearm         1     0.00   38.00
- accel_forearm_x       1     0.00   38.00
- magnet_forearm_x      1     0.00   38.00
- total_accel_dumbbell  1     0.00   38.00
- gyros_forearm_z       1     0.00   38.00
- accel_dumbbell_x      1     0.00   38.00
- accel_arm_z           1     0.00   38.00
- gyros_arm_z           1     0.00   38.00
- magnet_forearm_z      1     0.00   38.00
- pitch_arm             1     0.00   38.00
- accel_arm_y           1     0.00   38.00
- gyros_forearm_y       1     0.00   38.00
- magnet_arm_y          1     0.00   38.00
- accel_arm_x           1     0.00   38.00
- magnet_dumbbell_x     1     0.00   38.00
<none>                        0.00   40.00
```

```
- raw_timestamp_part_1  1   263.08  301.08
- num_window            1  1799.89 1837.89

Step:  AIC=38
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + total_accel_arm +
    gyros_arm_z + accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_y +
    total_accel_dumbbell + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    magnet_forearm_x + magnet_forearm_z

                       Df Deviance     AIC
- total_accel_arm       1     0.00   36.00
- pitch_forearm         1     0.00   36.00
- gyros_forearm_z       1     0.00   36.00
- total_accel_dumbbell  1     0.00   36.00
- accel_dumbbell_x      1     0.00   36.00
- accel_arm_z           1     0.00   36.00
- magnet_forearm_z      1     0.00   36.00
- accel_forearm_x       1     0.00   36.00
- gyros_arm_z           1     0.00   36.00
- magnet_forearm_x      1     0.00   36.00
- accel_arm_y           1     0.00   36.00
- pitch_arm             1     0.00   36.00
- magnet_arm_y          1     0.00   36.00
- gyros_forearm_y       1     0.00   36.00
- accel_arm_x           1     0.00   36.00
- magnet_dumbbell_x     1     0.00   36.00
<none>                         0.00   38.00
- raw_timestamp_part_1  1   304.28  340.28
- num_window            1  1952.44 1988.44

Step:  AIC=36
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + gyros_arm_z +
    accel_arm_x + accel_arm_y + accel_arm_z + magnet_arm_y +
    total_accel_dumbbell + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm + gyros_forearm_y + gyros_forearm_z + accel_forearm_x +
    magnet_forearm_x + magnet_forearm_z

                       Df Deviance     AIC
- accel_arm_z           1     0.00   34.00
- total_accel_dumbbell  1     0.00   34.00
- accel_dumbbell_x      1     0.00   34.00
- accel_forearm_x       1     0.00   34.00
- gyros_arm_z           1     0.00   34.00
- magnet_forearm_z      1     0.00   34.00
- gyros_forearm_z       1     0.00   34.00
- accel_arm_y           1     0.00   34.00
- magnet_forearm_x      1     0.00   34.00
- pitch_forearm         1     0.00   34.00
- pitch_arm             1     0.00   34.00
- magnet_arm_y          1     0.00   34.00
- gyros_forearm_y       1     0.00   34.00
- magnet_dumbbell_x     1     0.00   34.00
- accel_arm_x           1     0.00   34.00
<none>                         0.00   36.00
- raw_timestamp_part_1  1   363.71  397.71
- num_window            1  2159.60 2193.60
```

```
Step:  AIC=34
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + gyros_arm_z +
    accel_arm_x + accel_arm_y + magnet_arm_y + total_accel_dumbbell +
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm + gyros_forearm_y +
    gyros_forearm_z + accel_forearm_x + magnet_forearm_x + magnet_forearm_z

                       Df Deviance     AIC
- gyros_arm_z           1     0.00   32.00
- accel_arm_y           1     0.00   32.00
- magnet_forearm_x      1     0.00   32.00
- gyros_forearm_z       1     0.00   32.00
- pitch_forearm         1     0.00   32.00
- accel_forearm_x       1     0.00   32.00
- magnet_forearm_z      1     0.00   32.00
- accel_dumbbell_x      1     0.00   32.00
- total_accel_dumbbell  1     0.00   32.00
- pitch_arm             1     0.00   32.00
- gyros_forearm_y       1     0.00   32.00
- magnet_arm_y          1     0.00   32.00
- magnet_dumbbell_x     1     0.00   32.00
- accel_arm_x           1     0.00   32.00
<none>                        0.00   34.00
- raw_timestamp_part_1  1   363.71  395.71
- num_window            1  2226.35 2258.35

Step:  AIC=32
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + accel_arm_x +
    accel_arm_y + magnet_arm_y + total_accel_dumbbell + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + magnet_forearm_x + magnet_forearm_z

                       Df Deviance     AIC
- accel_arm_y           1     0.00   30.00
- magnet_forearm_z      1     0.00   30.00
- pitch_forearm         1     0.00   30.00
- magnet_forearm_x      1     0.00   30.00
- accel_dumbbell_x      1     0.00   30.00
- accel_forearm_x       1     0.00   30.00
- total_accel_dumbbell  1     0.00   30.00
- pitch_arm             1     0.00   30.00
- gyros_forearm_z       1     0.00   30.00
- gyros_forearm_y       1     0.00   30.00
- magnet_arm_y          1     0.00   30.00
- magnet_dumbbell_x     1     0.00   30.00
- accel_arm_x           1     0.00   30.00
<none>                        0.00   32.00
- raw_timestamp_part_1  1   411.68  441.68
- num_window            1  2246.17 2276.17

Step:  AIC=30
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + accel_arm_x +
    magnet_arm_y + total_accel_dumbbell + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + magnet_forearm_x + magnet_forearm_z

                       Df Deviance    AIC
```

```
- magnet_forearm_z      1      0.0   28.0
- magnet_forearm_x      1      0.0   28.0
- accel_forearm_x       1      0.0   28.0
- total_accel_dumbbell  1      0.0   28.0
- pitch_forearm         1      0.0   28.0
- gyros_forearm_z       1      0.0   28.0
- gyros_forearm_y       1      0.0   28.0
- magnet_arm_y          1      0.0   28.0
- pitch_arm             1      0.0   28.0
- accel_dumbbell_x      1      0.0   28.0
- magnet_dumbbell_x     1      0.0   28.0
- accel_arm_x           1      0.0   28.0
<none>                         0.0   30.0
- raw_timestamp_part_1  1    453.4  481.4
- num_window            1   2249.4 2277.4

Step:  AIC=28
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + accel_arm_x +
    magnet_arm_y + total_accel_dumbbell + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x + magnet_forearm_x

                       Df Deviance     AIC
- magnet_forearm_x      1     0.00   26.00
- accel_forearm_x       1     0.00   26.00
- total_accel_dumbbell  1     0.00   26.00
- pitch_forearm         1     0.00   26.00
- gyros_forearm_z       1     0.00   26.00
- gyros_forearm_y       1     0.00   26.00
- magnet_arm_y          1     0.00   26.00
- pitch_arm             1     0.00   26.00
- accel_dumbbell_x      1     0.00   26.00
- magnet_dumbbell_x     1     0.00   26.00
<none>                         0.00   28.00
- raw_timestamp_part_1  1   512.71  538.71
- accel_arm_x           1  2234.71 2260.71
- num_window            1  2687.05 2713.05

Step:  AIC=26
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + accel_arm_x +
    magnet_arm_y + total_accel_dumbbell + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z +
    accel_forearm_x

                       Df Deviance     AIC
- accel_forearm_x       1     0.00   24.00
- gyros_forearm_y       1     0.00   24.00
- pitch_forearm         1     0.00   24.00
- total_accel_dumbbell  1     0.00   24.00
- gyros_forearm_z       1     0.00   24.00
- magnet_arm_y          1     0.00   24.00
- pitch_arm             1     0.00   24.00
- magnet_dumbbell_x     1     0.00   24.00
- accel_arm_x           1     0.00   24.00
- accel_dumbbell_x      1     0.00   24.00
<none>                         0.00   26.00
- raw_timestamp_part_1  1   550.76  574.76
```

```
- num_window            1  2702.16 2726.16

Step:  AIC=24
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + accel_arm_x +
    magnet_arm_y + total_accel_dumbbell + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_y + gyros_forearm_z

                       Df Deviance    AIC
- gyros_forearm_y       1      0.0   22.0
- total_accel_dumbbell  1      0.0   22.0
- gyros_forearm_z       1      0.0   22.0
- magnet_arm_y          1      0.0   22.0
- pitch_arm             1      0.0   22.0
- accel_dumbbell_x      1      0.0   22.0
- magnet_dumbbell_x     1      0.0   22.0
- accel_arm_x           1      0.0   22.0
- pitch_forearm         1      0.0   22.0
<none>                         0.0   24.0
- raw_timestamp_part_1  1    631.1  653.1
- num_window            1   2752.0 2774.0

Step:  AIC=22
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + accel_arm_x +
    magnet_arm_y + total_accel_dumbbell + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm + gyros_forearm_z

                       Df Deviance     AIC
- gyros_forearm_z       1     0.00   20.00
- total_accel_dumbbell  1     0.00   20.00
- pitch_arm             1     0.00   20.00
- accel_dumbbell_x      1     0.00   20.00
- magnet_dumbbell_x     1     0.00   20.00
- magnet_arm_y          1     0.00   20.00
- pitch_forearm         1     0.00   20.00
- accel_arm_x           1     0.00   20.00
<none>                         0.00   22.00
- raw_timestamp_part_1  1   636.19  656.19
- num_window            1  2797.77 2817.77

Step:  AIC=20
classe ~ raw_timestamp_part_1 + num_window + pitch_arm + accel_arm_x +
    magnet_arm_y + total_accel_dumbbell + accel_dumbbell_x +
    magnet_dumbbell_x + pitch_forearm

                       Df Deviance     AIC
- pitch_arm             1     0.00   18.00
- total_accel_dumbbell  1     0.00   18.00
- magnet_dumbbell_x     1     0.00   18.00
- magnet_arm_y          1     0.00   18.00
- pitch_forearm         1     0.00   18.00
- accel_arm_x           1     0.00   18.00
- accel_dumbbell_x      1     0.00   18.00
<none>                         0.00   20.00
- raw_timestamp_part_1  1   636.38  654.38
- num_window            1  2830.14 2848.14

Step:  AIC=18
```

```
classe ~ raw_timestamp_part_1 + num_window + accel_arm_x + magnet_arm_y +
    total_accel_dumbbell + accel_dumbbell_x + magnet_dumbbell_x +
    pitch_forearm

                       Df Deviance     AIC
- total_accel_dumbbell  1     0.00   16.00
- accel_dumbbell_x      1     0.00   16.00
- magnet_dumbbell_x     1     0.00   16.00
- accel_arm_x           1     0.00   16.00
- pitch_forearm         1     0.00   16.00
- magnet_arm_y          1     0.00   16.00
<none>                             0.00   18.00
- raw_timestamp_part_1  1   779.63  795.63
- num_window            1  2972.84 2988.84

Step:  AIC=16
classe ~ raw_timestamp_part_1 + num_window + accel_arm_x + magnet_arm_y +
    accel_dumbbell_x + magnet_dumbbell_x + pitch_forearm

                       Df Deviance    AIC
- accel_dumbbell_x      1      0.0   14.0
- magnet_dumbbell_x     1      0.0   14.0
- magnet_arm_y          1      0.0   14.0
- accel_arm_x           1      0.0   14.0
- pitch_forearm         1      0.0   14.0
<none>                             0.0   16.0
- raw_timestamp_part_1  1   1009.6 1023.6
- num_window            1   2999.6 3013.6

Step:  AIC=14
classe ~ raw_timestamp_part_1 + num_window + accel_arm_x + magnet_arm_y +
    magnet_dumbbell_x + pitch_forearm

                       Df Deviance    AIC
- magnet_dumbbell_x     1      0.0   12.0
- magnet_arm_y          1      0.0   12.0
- pitch_forearm         1      0.0   12.0
- accel_arm_x           1      0.0   12.0
<none>                             0.0   14.0
- raw_timestamp_part_1  1   2170.5 2182.5
- num_window            1   3211.5 3223.5

Step:  AIC=12
classe ~ raw_timestamp_part_1 + num_window + accel_arm_x + magnet_arm_y +
    pitch_forearm

                       Df Deviance    AIC
- magnet_arm_y          1      0.0   10.0
- accel_arm_x           1      0.0   10.0
- pitch_forearm         1      0.0   10.0
<none>                             0.0   12.0
- raw_timestamp_part_1  1   3282.6 3292.6
- num_window            1   3437.9 3447.9

Step:  AIC=10
classe ~ raw_timestamp_part_1 + num_window + accel_arm_x + pitch_forearm
```

```
                        Df Deviance    AIC
- accel_arm_x            1      0.0    8.0
- pitch_forearm          1      0.0    8.0
<none>                          0.0   10.0
- num_window             1   3520.4 3528.4
- raw_timestamp_part_1   1   4496.5 4504.5

Step:  AIC=8
classe ~ raw_timestamp_part_1 + num_window + pitch_forearm

                        Df Deviance    AIC
- pitch_forearm          1      0.0    6.0
<none>                          0.0    8.0
- num_window             1   3520.4 3526.4
- raw_timestamp_part_1   1   4662.4 4668.4

Step:  AIC=6
classe ~ raw_timestamp_part_1 + num_window

                        Df Deviance    AIC
<none>                          0.0    6.0
- num_window             1   4449.3 4453.3
- raw_timestamp_part_1   1   5138.0 5142.0
There were 50 or more warnings (use warnings() to see the first 50)
> summary(step_fit)

Call:
glm(formula = classe ~ raw_timestamp_part_1 + num_window, family = binomial(l
ink = "logit"),
    data = dataTrain)

Deviance Residuals:
       Min          1Q      Median          3Q         Max
-2.304e-03  -2.000e-08   2.000e-08   2.000e-08   2.235e-03

Coefficients:
                        Estimate Std. Error z value Pr(>|z|)
(Intercept)           2.688e+08  9.192e+08   0.292    0.770
raw_timestamp_part_1 -2.032e-01  6.947e-01  -0.292    0.770
num_window            4.362e+01  1.477e+02   0.295    0.768

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 5.1382e+03  on 4003  degrees of freedom
Residual deviance: 3.8673e-04  on 4001  degrees of freedom
AIC: 6.0004

Number of Fisher Scoring iterations: 25

> confint(step_fit)
Waiting for profiling to be done...
                             2.5 %        97.5 %
(Intercept)           5.356253e+08  4.612380e+08
raw_timestamp_part_1 -3.486092e-01 -4.048320e-01
num_window            8.649066e+01  7.453712e+01
Warning messages:
1: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
2: glm.fit: fitted probabilities numerically 0 or 1 occurred
3: glm.fit: fitted probabilities numerically 0 or 1 occurred
4: glm.fit: fitted probabilities numerically 0 or 1 occurred
5: glm.fit: fitted probabilities numerically 0 or 1 occurred
6: glm.fit: fitted probabilities numerically 0 or 1 occurred
7: glm.fit: fitted probabilities numerically 0 or 1 occurred
8: glm.fit: fitted probabilities numerically 0 or 1 occurred
9: glm.fit: fitted probabilities numerically 0 or 1 occurred
> #ANOVA on base model
> anova(fit,test = 'Chisq')


Analysis of Deviance Table

Model: binomial, link: logit

Response: classe

Terms added sequentially (first to last)


                     Df Deviance Resid. Df Resid. Dev  Pr(>Chi)
NULL                                 4003     5138.2
raw_timestamp_part_1  1    689.0      4002     4449.3 < 2.2e-16 ***
num_window            1   4449.3      4001        0.0 < 2.2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
Warning message:
glm.fit: fitted probabilities numerically 0 or 1 occurred
>
> #plot the fitted model
> plot(fit$fitted.values)
> pred_link <- predict(fit,newdata = dataTest,type = 'link')
Warning message:
In predict.lm(object, newdata, se.fit, scale = 1, type = ifelse(type ==  :
  prediction from a rank-deficient fit may be misleading
>
> #check for multicollinearity
> library(car)
Loading required package: carData

Attaching package: ‘car’

The following object is masked from ‘package:arules’:

    recode

> vif(fit)
Error in vif.default(fit) : there are aliased coefficients in the model
> vif(step_fit)
raw_timestamp_part_1           num_window
            67.38515             67.38515


> library(caret)
> #with default prob cut 0.50
```

```
> dataTest$pred_classe <- ifelse(pred<0.7,'yes','no')
>
> table(dataTest$pred_classe,dataTest$classe)

       A  B  C  D  E
  no   0  0 19  0  0
  yes  0  0  1  0  0

>
```

```
#training split of churn classes
> round(table(dataTrain$classe)/nrow(dataTrain),2)*100

 A  B  C  D  E
34 23  2  7 34
> # test split of churn classes
> round(table(dataTest$classe)/nrow(dataTest),2)*100

  A   B   C   D   E
  0   0 100   0   0
> #predicted split of churn classes
> round(table(dataTest$pred_classe)/nrow(dataTest),2)*100

 no yes
 95   5
```

```
Confusion Matrix and Statistics

          Reference
Prediction  A  B  C  D  E
         A  0  0  0  0  0
         B  0  0  0  0  0
         C  0  0 20  0  0
         D  0  0  0  0  0
         E  0  0  0  0  0

Overall Statistics

               Accuracy : 1
                 95% CI : (0.8316, 1)
    No Information Rate : 1
    P-Value [Acc > NIR] : 1

                  Kappa : NaN
 Mcnemar's Test P-Value : NA

Statistics by Class:

                     Class: A Class: B Class: C Class: D Class: E
Sensitivity                NA       NA        1       NA       NA
Specificity                 1        1       NA        1        1
Pos Pred Value             NA       NA       NA       NA       NA
Neg Pred Value             NA       NA       NA       NA       NA
Prevalence                  0        0        1        0        0
Detection Rate              0        0        1        0        0
Detection Prevalence        0        0        1        0        0
Balanced Accuracy          NA       NA       NA       NA       NA
```

```
>
```

```
#how do we create a cross validation scheme
> control <- trainControl(method = 'repeatedcv',
+                         number = 10,
+                         repeats = 3)
> seed <-7
> metric <- 'Accuracy'
> set.seed(seed)
> fit_default <- train(classe~.,
+                      data = dataTrain,
+                      method = 'glm',
+                      metric = metric,
+                      trControl = control)
Something is wrong; all the Accuracy metric values are missing:
    Accuracy       Kappa
 Min.   : NA   Min.   : NA
 1st Qu.: NA   1st Qu.: NA
 Median : NA   Median : NA
 Mean   :NaN   Mean   :NaN
 3rd Qu.: NA   3rd Qu.: NA
 Max.   : NA   Max.   : NA
 NA's   :1     NA's   :1
Error: Stopping
In addition: Warning message:
In nominalTrainWorkflow(x = x, y = y, wts = weights, info = trainInfo,  :
  There were missing values in resampled performance measures.
> print(fit_default)
Error in print(fit_default) : object 'fit_default' not found
```

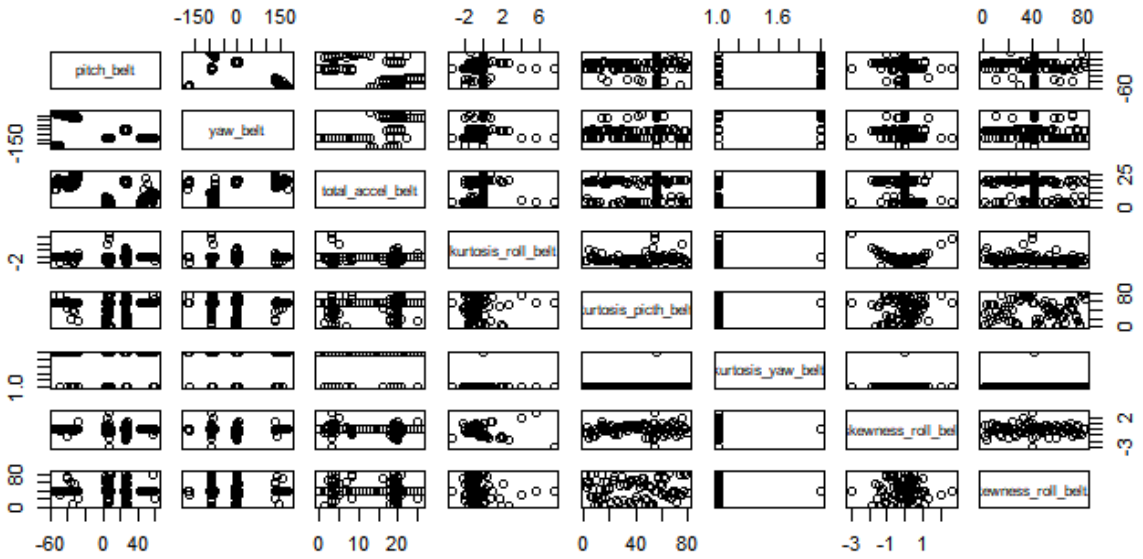
```
>
> library(caret)
> varImp(step_fit)
                      Overall
raw_timestamp_part_1 0.2924915
num_window           0.2953298
> varImp(fit_default)
Error in varImp(fit_default) : object 'fit_default' not found

>
```

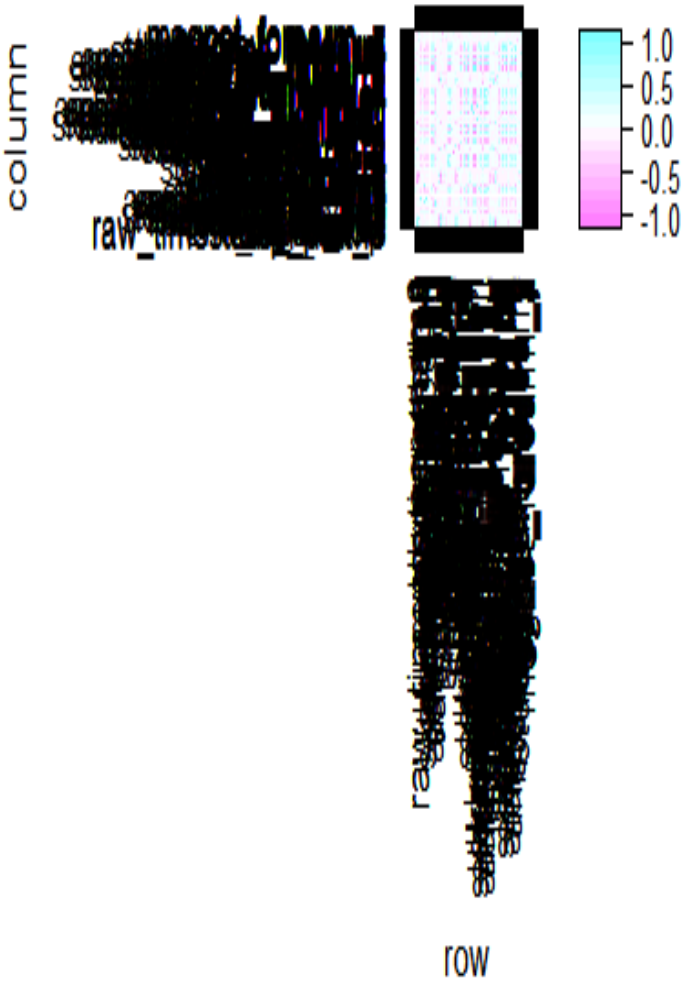
```
> library(devtools)
>
> install_github("riv","tomasgreif")
Skipping install of 'woe' from a github remote, the SHA1 (43fcf268) has not c
hanged since last install.
  Use `force = TRUE` to force installation
Warning message:
Username parameter is deprecated. Please use tomasgreif/riv
>
> install_github("woe","tomasgreif")
Skipping install of 'woe' from a github remote, the SHA1 (43fcf268) has not c
hanged since last install.
  Use `force = TRUE` to force installation
Warning message:
```

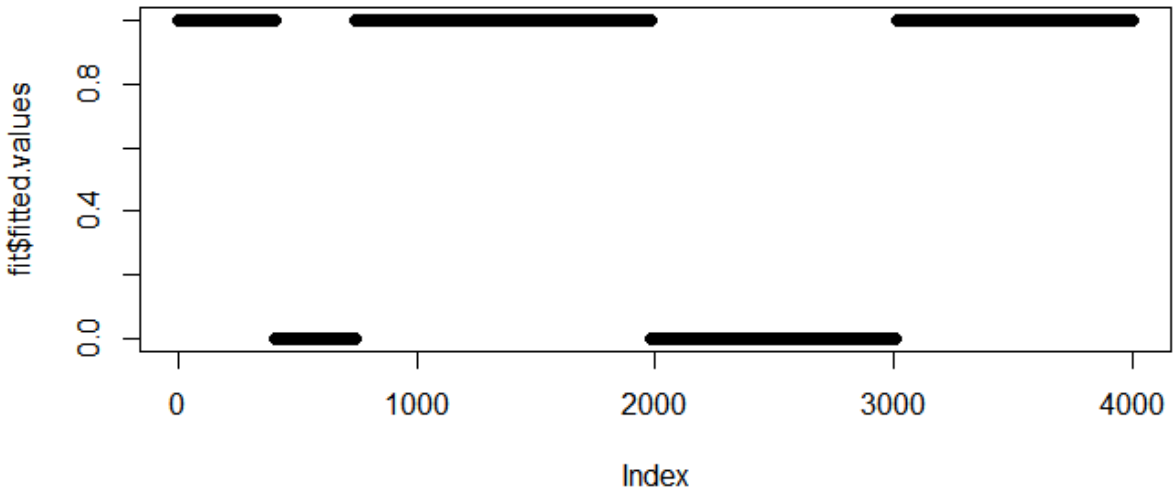
```
Username parameter is deprecated. Please use tomasgreif/woe
>
> library(woe)
>
> library(riv)


> iv_df <- iv.mult(dataTrain, y="classe", summary=TRUE, verbose=TRUE)
Started processing of data frame: dataTrain
Calling iv.num for variable: user_name
  Building rpart model
  Model finished
  Sending model to tree parser
  Rules parsed: 2
  Mapping nodes to data
    SQL Merge
    DF Merge
  Calling iv.str for nodes
Error in iv.str(df, "tmp_iv_calc_label", y) : Not a binary outcome
> iv_df
Error: object 'iv_df' not found
>
> iv <- iv.mult(dataTrain, y="classe", summary=FALSE, verbose=TRUE)
Started processing of data frame: dataTrain
Calling iv.num for variable: user_name
  Building rpart model
  Model finished
  Sending model to tree parser
  Rules parsed: 2
  Mapping nodes to data
    SQL Merge
    DF Merge
  Calling iv.str for nodes
Error in iv.str(df, "tmp_iv_calc_label", y) : Not a binary outcome
> # Plot information value summary
>
> iv.plot.summary(iv_df)
Error in ggplot(data = iv) : object 'iv_df' not found
```


pitch_belt
yaw_belt
total_accel_belt
kurtosis_roll_belt
urtosis_picth_bel
kurtosis_yaw_belt
kewness_roll_bel
ewness_roll_belt
-150 0 150
-2 2 6
1.0 1.6
0 40 80
-60
-150
0 25
-2
0 80
1.0
-3 2
0 80
-60 0 40
0 10 20
0 40 80
-3 -1 1

Correlation matrix for all WLE features in training set




fit$fitted.values
0.0
0.4
0.8
0
1000
2000
3000
4000
Index