**model\_evaluation\_and\_assessment\_excercise.R**

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| **setwd**("C:/Users/Shraddha/Desktop/sv R related/acadgild/assignments/session19 As signment")  WLE<- **read.csv**("WLE.csv",header=T, na.strings=**c**("","NA")) data<-WLE  **View**(data)  training<-data[1**:**4010,] testing<-data[4011**:**4024,] **names**(training) | | | |
| ## | [1] | "user\_name" | "raw\_timestamp\_part\_1" |
| ## | [3] | "raw\_timestamp\_part\_2" | "cvtd\_timestamp" |
| ## | [5] | "new\_window" | "num\_window" |
| ## | [7] | "roll\_belt" | "pitch\_belt" |
| ## | [9] | "yaw\_belt" | "total\_accel\_belt" |
| ## | [11] | "kurtosis\_roll\_belt" | "kurtosis\_picth\_belt" |
| ## | [13] | "skewness\_roll\_belt" | "skewness\_roll\_belt.1" |
| ## | [15] | "max\_roll\_belt" | "max\_picth\_belt" |
| ## | [17] | "max\_yaw\_belt" | "min\_roll\_belt" |
| ## | [19] | "min\_pitch\_belt" | "min\_yaw\_belt" |
| ## | [21] | "amplitude\_roll\_belt" | "amplitude\_pitch\_belt" |
| ## | [23] | "amplitude\_yaw\_belt" | "var\_total\_accel\_belt" |
| ## | [25] | "avg\_roll\_belt" | "stddev\_roll\_belt" |
| ## | [27] | "var\_roll\_belt" | "avg\_pitch\_belt" |
| ## | [29] | "stddev\_pitch\_belt" | "var\_pitch\_belt" |
| ## | [31] | "avg\_yaw\_belt" | "stddev\_yaw\_belt" |
| ## | [33] | "var\_yaw\_belt" | "gyros\_belt\_x" |
| ## | [35] | "gyros\_belt\_y" | "gyros\_belt\_z" |
| ## | [37] | "accel\_belt\_x" | "accel\_belt\_y" |
| ## | [39] | "accel\_belt\_z" | "magnet\_belt\_x" |
| ## | [41] | "magnet\_belt\_y" | "magnet\_belt\_z" |
| ## | [43] | "roll\_arm" | "pitch\_arm" |
| ## | [45] | "yaw\_arm" | "total\_accel\_arm" |
| ## | [47] | "var\_accel\_arm" | "avg\_roll\_arm" |
| ## | [49] | "stddev\_roll\_arm" | "var\_roll\_arm" |
| ## | [51] | "avg\_pitch\_arm" | "stddev\_pitch\_arm" |
| ## | [53] | "var\_pitch\_arm" | "avg\_yaw\_arm" |
| ## | [55] | "stddev\_yaw\_arm" | "var\_yaw\_arm" |
| ## | [57] | "gyros\_arm\_x" | "gyros\_arm\_y" |
| ## | [59] | "gyros\_arm\_z" | "accel\_arm\_x" |
| ## | [61] | "accel\_arm\_y" | "accel\_arm\_z" |
| ## | [63] | "magnet\_arm\_x" | "magnet\_arm\_y" |
| ## | [65] | "magnet\_arm\_z" | "kurtosis\_roll\_arm" |

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| ## | [67] | "kurtosis\_picth\_arm" | "kurtosis\_yaw\_arm" |
| ## | [69] | "skewness\_roll\_arm" | "skewness\_pitch\_arm" |
| ## | [71] | "skewness\_yaw\_arm" | "max\_roll\_arm" |
| ## | [73] | "max\_picth\_arm" | "max\_yaw\_arm" |
| ## | [75] | "min\_roll\_arm" | "min\_pitch\_arm" |
| ## | [77] | "min\_yaw\_arm" | "amplitude\_roll\_arm" |
| ## | [79] | "amplitude\_pitch\_arm" | "amplitude\_yaw\_arm" |
| ## | [81] | "roll\_dumbbell" | "pitch\_dumbbell" |
| ## | [83] | "yaw\_dumbbell" | "kurtosis\_roll\_dumbbell" |
| ## | [85] | "kurtosis\_picth\_dumbbell" | "skewness\_roll\_dumbbell" |
| ## | [87] | "skewness\_pitch\_dumbbell" | "max\_roll\_dumbbell" |
| ## | [89] | "max\_picth\_dumbbell" | "max\_yaw\_dumbbell" |
| ## | [91] | "min\_roll\_dumbbell" | "min\_pitch\_dumbbell" |
| ## | [93] | "min\_yaw\_dumbbell" | "amplitude\_roll\_dumbbell" |
| ## | [95] | "amplitude\_pitch\_dumbbell" | "amplitude\_yaw\_dumbbell" |
| ## | [97] | "total\_accel\_dumbbell" | "var\_accel\_dumbbell" |
| ## | [99] | "avg\_roll\_dumbbell" | "stddev\_roll\_dumbbell" |
| ## | [101] | "var\_roll\_dumbbell" | "avg\_pitch\_dumbbell" |
| ## | [103] | "stddev\_pitch\_dumbbell" | "var\_pitch\_dumbbell" |
| ## | [105] | "avg\_yaw\_dumbbell" | "stddev\_yaw\_dumbbell" |
| ## | [107] | "var\_yaw\_dumbbell" | "gyros\_dumbbell\_x" |
| ## | [109] | "gyros\_dumbbell\_y" | "gyros\_dumbbell\_z" |
| ## | [111] | "accel\_dumbbell\_x" | "accel\_dumbbell\_y" |
| ## | [113] | "accel\_dumbbell\_z" | "magnet\_dumbbell\_x" |
| ## | [115] | "magnet\_dumbbell\_y" | "magnet\_dumbbell\_z" |
| ## | [117] | "roll\_forearm" | "pitch\_forearm" |
| ## | [119] | "yaw\_forearm" | "kurtosis\_roll\_forearm" |
| ## | [121] | "kurtosis\_picth\_forearm" | "skewness\_roll\_forearm" |
| ## | [123] | "skewness\_pitch\_forearm" | "max\_roll\_forearm" |
| ## | [125] | "max\_picth\_forearm" | "max\_yaw\_forearm" |
| ## | [127] | "min\_roll\_forearm" | "min\_pitch\_forearm" |
| ## | [129] | "min\_yaw\_forearm" | "amplitude\_roll\_forearm" |
| ## | [131] | "amplitude\_pitch\_forearm" | "amplitude\_yaw\_forearm" |
| ## | [133] | "total\_accel\_forearm" | "var\_accel\_forearm" |
| ## | [135] | "avg\_roll\_forearm" | "stddev\_roll\_forearm" |
| ## | [137] | "var\_roll\_forearm" | "avg\_pitch\_forearm" |
| ## | [139] | "stddev\_pitch\_forearm" | "var\_pitch\_forearm" |
| ## | [141] | "avg\_yaw\_forearm" | "stddev\_yaw\_forearm" |
| ## | [143] | "var\_yaw\_forearm" | "gyros\_forearm\_x" |
| ## | [145] | "gyros\_forearm\_y" | "gyros\_forearm\_z" |
| ## | [147] | "accel\_forearm\_x" | "accel\_forearm\_y" |
| ## | [149] | "accel\_forearm\_z" | "magnet\_forearm\_x" |
| ## | [151] | "magnet\_forearm\_y" | "magnet\_forearm\_z" |
| ## | [153] | "accel\_forearm\_y.1" | "accel\_forearm\_z.1" |
| ## | [155] | "magnet\_forearm\_x.1" | "magnet\_forearm\_y.1" |
| ## | [157] | "magnet\_forearm\_z.1" | "classe" |
| *# logistic regression model:*  fit <- **glm**(classe**~**.,data = training,family = binomial) | | | |

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| ## Warning: glm.fit: algorithm did not converge  ## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred  **summary**(fit) ##  ## Call:  ## glm(formula = classe ~ ., family = binomial, data = training) ##  ## Deviance Residuals:  ## Min 1Q Median 3Q Max ## -1.477e-04 -2.100e-08 2.100e-08 2.100e-08 9.859e-05 ##  ## Coefficients: (18 not defined because of singularities) | | | | | | | |
| ## |  |  | Estimate | Std. Error | z | value | Pr(>|z|) |
| ## | (Intercept) |  | 3.202e+10 | 1.709e+13 |  | 0.002 | 0.999 |
| ## | user\_namecarlitos |  | 6.085e+06 | 3.247e+09 |  | 0.002 | 0.999 |
| ## | user\_nameeurico |  | -8.308e+06 | 4.435e+09 |  | -0.002 | 0.999 |
| ## | user\_namejeremy |  | -3.867e+06 | 2.065e+09 |  | -0.002 | 0.999 |
| ## | user\_namepedro |  | 6.342e+06 | 3.385e+09 |  | 0.002 | 0.999 |
| ## | raw\_timestamp\_part\_1 |  | -2.421e+01 | 1.292e+04 |  | -0.002 | 0.999 |
| ## | raw\_timestamp\_part\_2 |  | 1.411e-05 | 2.360e-02 |  | 0.001 | 1.000 |
| ## | cvtd\_timestamp28/11/2011 | 14:15 | NA | NA |  | NA | NA |
| ## | cvtd\_timestamp30/11/2011 | 17:12 | NA | NA |  | NA | NA |
| ## | cvtd\_timestamp5/12/2011 | 11:23 | -2.151e+03 | 1.117e+06 |  | -0.002 | 0.998 |
| ## | cvtd\_timestamp5/12/2011 | 11:25 | NA | NA |  | NA | NA |
| ## | cvtd\_timestamp5/12/2011 | 14:22 | -1.842e+01 | 8.271e+04 |  | 0.000 | 1.000 |
| ## | cvtd\_timestamp5/12/2011 | 14:23 | NA | NA |  | NA | NA |
| ## | new\_windowyes |  | -1.196e+04 | 9.115e+08 |  | 0.000 | 1.000 |
| ## | num\_window |  | 3.216e+01 | 1.436e+04 |  | 0.002 | 0.998 |
| ## | roll\_belt |  | 3.836e+00 | 8.842e+03 |  | 0.000 | 1.000 |
| ## | pitch\_belt |  | 3.331e+00 | 1.228e+04 |  | 0.000 | 1.000 |
| ## | yaw\_belt |  | -1.298e-01 | 5.861e+02 |  | 0.000 | 1.000 |
| ## | total\_accel\_belt |  | -2.160e+00 | 1.120e+04 |  | 0.000 | 1.000 |
| ## | kurtosis\_roll\_belt |  | -2.413e+02 | 1.132e+07 |  | 0.000 | 1.000 |
| ## | kurtosis\_picth\_belt |  | 2.133e+00 | 6.052e+04 |  | 0.000 | 1.000 |
| ## | skewness\_roll\_belt |  | 1.471e+01 | 4.592e+05 |  | 0.000 | 1.000 |
| ## | skewness\_roll\_belt.1 |  | -1.419e+01 | 1.658e+05 |  | 0.000 | 1.000 |
| ## | max\_roll\_belt |  | 1.833e+02 | 2.214e+07 |  | 0.000 | 1.000 |
| ## | max\_picth\_belt |  | 2.699e+01 | 2.798e+05 |  | 0.000 | 1.000 |
| ## | max\_yaw\_belt |  | 2.329e+02 | 1.125e+07 |  | 0.000 | 1.000 |
| ## | min\_roll\_belt |  | -2.742e+02 | 2.014e+07 |  | 0.000 | 1.000 |
| ## | min\_pitch\_belt |  | -2.265e+01 | 1.450e+06 |  | 0.000 | 1.000 |
| ## | min\_yaw\_belt |  | NA | NA |  | NA | NA |
| ## | amplitude\_roll\_belt |  | -2.385e+02 | 2.213e+07 |  | 0.000 | 1.000 |
| ## | amplitude\_pitch\_belt |  | NA | NA |  | NA | NA |
| ## | amplitude\_yaw\_belt |  | NA | NA |  | NA | NA |
| ## | var\_total\_accel\_belt |  | -1.510e+01 | 4.775e+05 |  | 0.000 | 1.000 |
| ## | avg\_roll\_belt |  | 2.785e+00 | 1.051e+05 |  | 0.000 | 1.000 |

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| ## | stddev\_roll\_belt | 1.753e+01 | 1.265e+06 | 0.000 | 1.000 |
| ## | var\_roll\_belt | -3.117e+00 | 1.134e+05 | 0.000 | 1.000 |
| ## | avg\_pitch\_belt | -6.328e+00 | 1.748e+05 | 0.000 | 1.000 |
| ## | stddev\_pitch\_belt | -8.170e+01 | 1.457e+06 | 0.000 | 1.000 |
| ## | var\_pitch\_belt | 1.734e+01 | 3.934e+05 | 0.000 | 1.000 |
| ## | avg\_yaw\_belt | 8.784e+01 | 2.140e+06 | 0.000 | 1.000 |
| ## | stddev\_yaw\_belt | 1.326e+00 | 4.623e+06 | 0.000 | 1.000 |
| ## | var\_yaw\_belt | 1.552e-02 | 1.262e+04 | 0.000 | 1.000 |
| ## | gyros\_belt\_x | 1.681e+01 | 1.064e+05 | 0.000 | 1.000 |
| ## | gyros\_belt\_y | 1.424e+01 | 3.427e+05 | 0.000 | 1.000 |
| ## | gyros\_belt\_z | -6.446e+00 | 1.389e+05 | 0.000 | 1.000 |
| ## | accel\_belt\_x | -1.552e-01 | 1.451e+03 | 0.000 | 1.000 |
| ## | accel\_belt\_y | 4.502e-02 | 1.660e+03 | 0.000 | 1.000 |
| ## | accel\_belt\_z | 3.158e-01 | 1.794e+03 | 0.000 | 1.000 |
| ## | magnet\_belt\_x | 2.267e-01 | 8.493e+02 | 0.000 | 1.000 |
| ## | magnet\_belt\_y | 1.765e-01 | 8.810e+02 | 0.000 | 1.000 |
| ## | magnet\_belt\_z | 1.660e-01 | 5.184e+02 | 0.000 | 1.000 |
| ## | roll\_arm | -5.731e-02 | 1.442e+02 | 0.000 | 1.000 |
| ## | pitch\_arm | -5.222e-01 | 6.479e+02 | -0.001 | 0.999 |
| ## | yaw\_arm | -1.016e-01 | 1.354e+02 | -0.001 | 0.999 |
| ## | total\_accel\_arm | -5.238e-01 | 2.292e+03 | 0.000 | 1.000 |
| ## | var\_accel\_arm | -4.505e-01 | 2.112e+04 | 0.000 | 1.000 |
| ## | avg\_roll\_arm | -1.565e-01 | 1.405e+04 | 0.000 | 1.000 |
| ## | stddev\_roll\_arm | 3.474e+00 | 1.064e+05 | 0.000 | 1.000 |
| ## | var\_roll\_arm | -2.031e-02 | 3.502e+02 | 0.000 | 1.000 |
| ## | avg\_pitch\_arm | 1.466e+00 | 1.531e+05 | 0.000 | 1.000 |
| ## | stddev\_pitch\_arm | 1.567e+01 | 1.588e+05 | 0.000 | 1.000 |
| ## | var\_pitch\_arm | 1.251e-02 | 3.281e+03 | 0.000 | 1.000 |
| ## | avg\_yaw\_arm | 1.020e+00 | 1.778e+04 | 0.000 | 1.000 |
| ## | stddev\_yaw\_arm | -6.699e+00 | 5.032e+04 | 0.000 | 1.000 |
| ## | var\_yaw\_arm | 2.898e-02 | 4.722e+02 | 0.000 | 1.000 |
| ## | gyros\_arm\_x | 1.337e+00 | 1.778e+04 | 0.000 | 1.000 |
| ## | gyros\_arm\_y | 6.535e+00 | 4.083e+04 | 0.000 | 1.000 |
| ## | gyros\_arm\_z | 4.908e+00 | 2.287e+04 | 0.000 | 1.000 |
| ## | accel\_arm\_x | -1.632e-02 | 5.067e+02 | 0.000 | 1.000 |
| ## | accel\_arm\_y | -3.202e-02 | 5.528e+02 | 0.000 | 1.000 |
| ## | accel\_arm\_z | -1.523e-02 | 3.129e+02 | 0.000 | 1.000 |
| ## | magnet\_arm\_x | 7.353e-03 | 1.451e+02 | 0.000 | 1.000 |
| ## | magnet\_arm\_y | 1.141e-01 | 3.629e+02 | 0.000 | 1.000 |
| ## | magnet\_arm\_z | -5.990e-02 | 2.168e+02 | 0.000 | 1.000 |
| ## | kurtosis\_roll\_arm | -1.279e+00 | 1.372e+05 | 0.000 | 1.000 |
| ## | kurtosis\_picth\_arm | 2.095e+00 | 2.848e+05 | 0.000 | 1.000 |
| ## | kurtosis\_yaw\_arm | -8.336e+00 | 1.133e+05 | 0.000 | 1.000 |
| ## | skewness\_roll\_arm | 2.048e+01 | 1.972e+06 | 0.000 | 1.000 |
| ## | skewness\_pitch\_arm | 3.350e+01 | 1.123e+06 | 0.000 | 1.000 |
| ## | skewness\_yaw\_arm | -6.954e+00 | 2.958e+05 | 0.000 | 1.000 |
| ## | max\_roll\_arm | -3.085e+01 | 1.179e+07 | 0.000 | 1.000 |
| ## | max\_picth\_arm | -1.668e+03 | 2.989e+07 | 0.000 | 1.000 |
| ## | max\_yaw\_arm | 3.360e+00 | 2.645e+05 | 0.000 | 1.000 |
| ## | min\_roll\_arm | 3.030e+01 | 1.186e+07 | 0.000 | 1.000 |

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| ## | min\_pitch\_arm | 1.668e+03 | 2.988e+07 | 0.000 | 1.000 |
| ## | min\_yaw\_arm | -5.460e+00 | 2.966e+05 | 0.000 | 1.000 |
| ## | amplitude\_roll\_arm | 2.402e+01 | 1.174e+07 | 0.000 | 1.000 |
| ## | amplitude\_pitch\_arm | 1.669e+03 | 2.985e+07 | 0.000 | 1.000 |
| ## | amplitude\_yaw\_arm | NA | NA | NA | NA |
| ## | roll\_dumbbell | 1.295e-01 | 6.889e+02 | 0.000 | 1.000 |
| ## | pitch\_dumbbell | -3.122e-01 | 1.172e+03 | 0.000 | 1.000 |
| ## | yaw\_dumbbell | 1.662e-01 | 6.861e+02 | 0.000 | 1.000 |
| ## | kurtosis\_roll\_dumbbell | 3.774e+02 | 1.605e+07 | 0.000 | 1.000 |
| ## | kurtosis\_picth\_dumbbell | -4.045e+00 | 4.009e+05 | 0.000 | 1.000 |
| ## | skewness\_roll\_dumbbell | 4.256e+01 | 3.945e+05 | 0.000 | 1.000 |
| ## | skewness\_pitch\_dumbbell | 2.731e+01 | 4.182e+05 | 0.000 | 1.000 |
| ## | max\_roll\_dumbbell | 2.581e+02 | 1.216e+07 | 0.000 | 1.000 |
| ## | max\_picth\_dumbbell | 2.558e+02 | 1.105e+07 | 0.000 | 1.000 |
| ## | max\_yaw\_dumbbell | -3.795e+02 | 1.572e+07 | 0.000 | 1.000 |
| ## | min\_roll\_dumbbell | -2.594e+02 | 1.209e+07 | 0.000 | 1.000 |
| ## | min\_pitch\_dumbbell | -2.567e+02 | 1.104e+07 | 0.000 | 1.000 |
| ## | min\_yaw\_dumbbell | NA | NA | NA | NA |
| ## | amplitude\_roll\_dumbbell | -2.599e+02 | 1.217e+07 | 0.000 | 1.000 |
| ## | amplitude\_pitch\_dumbbell | -2.565e+02 | 1.105e+07 | 0.000 | 1.000 |
| ## | amplitude\_yaw\_dumbbell | NA | NA | NA | NA |
| ## | total\_accel\_dumbbell | 1.707e+00 | 5.707e+03 | 0.000 | 1.000 |
| ## | var\_accel\_dumbbell | 7.186e-01 | 4.159e+04 | 0.000 | 1.000 |
| ## | avg\_roll\_dumbbell | -4.136e-01 | 1.115e+04 | 0.000 | 1.000 |
| ## | stddev\_roll\_dumbbell | 6.602e-02 | 9.903e+04 | 0.000 | 1.000 |
| ## | var\_roll\_dumbbell | 1.127e-02 | 8.361e+02 | 0.000 | 1.000 |
| ## | avg\_pitch\_dumbbell | 2.273e+00 | 6.363e+04 | 0.000 | 1.000 |
| ## | stddev\_pitch\_dumbbell | -9.758e-01 | 5.308e+05 | 0.000 | 1.000 |
| ## | var\_pitch\_dumbbell | 1.958e-02 | 4.552e+03 | 0.000 | 1.000 |
| ## | avg\_yaw\_dumbbell | 9.768e-01 | 3.070e+04 | 0.000 | 1.000 |
| ## | stddev\_yaw\_dumbbell | 3.835e+00 | 1.491e+05 | 0.000 | 1.000 |
| ## | var\_yaw\_dumbbell | -2.194e-02 | 1.529e+03 | 0.000 | 1.000 |
| ## | gyros\_dumbbell\_x | 1.089e+01 | 4.168e+04 | 0.000 | 1.000 |
| ## | gyros\_dumbbell\_y | -5.854e-01 | 3.294e+04 | 0.000 | 1.000 |
| ## | gyros\_dumbbell\_z | 5.848e+00 | 3.567e+04 | 0.000 | 1.000 |
| ## | accel\_dumbbell\_x | 4.649e-01 | 1.511e+03 | 0.000 | 1.000 |
| ## | accel\_dumbbell\_y | -1.996e-01 | 8.743e+02 | 0.000 | 1.000 |
| ## | accel\_dumbbell\_z | -2.526e-01 | 1.095e+03 | 0.000 | 1.000 |
| ## | magnet\_dumbbell\_x | -1.429e-01 | 4.937e+02 | 0.000 | 1.000 |
| ## | magnet\_dumbbell\_y | 8.417e-02 | 6.860e+02 | 0.000 | 1.000 |
| ## | magnet\_dumbbell\_z | 5.264e-02 | 3.787e+02 | 0.000 | 1.000 |
| ## | roll\_forearm | 9.560e-03 | 1.646e+02 | 0.000 | 1.000 |
| ## | pitch\_forearm | 1.215e-01 | 1.499e+03 | 0.000 | 1.000 |
| ## | yaw\_forearm | -5.853e-03 | 1.043e+02 | 0.000 | 1.000 |
| ## | kurtosis\_roll\_forearm | 2.956e+01 | 9.889e+06 | 0.000 | 1.000 |
| ## | kurtosis\_picth\_forearm | 2.758e+00 | 1.556e+05 | 0.000 | 1.000 |
| ## | skewness\_roll\_forearm | -2.087e+00 | 4.561e+05 | 0.000 | 1.000 |
| ## | skewness\_pitch\_forearm | 2.092e+01 | 8.209e+05 | 0.000 | 1.000 |
| ## | max\_roll\_forearm | -5.134e+02 | 8.853e+06 | 0.000 | 1.000 |
| ## | max\_picth\_forearm | -1.242e+00 | 2.123e+04 | 0.000 | 1.000 |

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| ## | max\_yaw\_forearm -3.206e+01 9.579e+06 0.000 | 1.000 |
| ## | min\_roll\_forearm 5.123e+02 8.855e+06 0.000 | 1.000 |
| ## | min\_pitch\_forearm 3.160e-02 2.930e+04 0.000 | 1.000 |
| ## | min\_yaw\_forearm NA NA NA | NA |
| ## | amplitude\_roll\_forearm 5.167e+02 8.817e+06 0.000 | 1.000 |
| ## | amplitude\_pitch\_forearm NA NA NA | NA |
| ## | amplitude\_yaw\_forearm NA NA NA | NA |
| ## | total\_accel\_forearm 3.209e-01 2.326e+03 0.000 | 1.000 |
| ## | var\_accel\_forearm -8.244e-01 1.426e+04 0.000 | 1.000 |
| ## | avg\_roll\_forearm -3.349e-01 1.792e+04 0.000 | 1.000 |
| ## | stddev\_roll\_forearm 3.649e-01 1.261e+05 0.000 | 1.000 |
| ## | var\_roll\_forearm 1.848e-03 7.983e+02 0.000 | 1.000 |
| ## | avg\_pitch\_forearm -5.398e-01 1.044e+05 0.000 | 1.000 |
| ## | stddev\_pitch\_forearm -1.688e+01 6.420e+05 0.000 | 1.000 |
| ## | var\_pitch\_forearm 2.086e-01 9.747e+03 0.000 | 1.000 |
| ## | avg\_yaw\_forearm 1.224e+00 3.374e+04 0.000 | 1.000 |
| ## | stddev\_yaw\_forearm 3.636e+00 1.006e+05 0.000 | 1.000 |
| ## | var\_yaw\_forearm -1.549e-02 8.103e+02 0.000 | 1.000 |
| ## | gyros\_forearm\_x 1.341e+01 2.526e+04 0.001 | 1.000 |
| ## | gyros\_forearm\_y 2.150e-03 1.120e+04 0.000 | 1.000 |
| ## | gyros\_forearm\_z -1.424e+00 2.607e+04 0.000 | 1.000 |
| ## | accel\_forearm\_x -8.488e-02 2.285e+02 0.000 | 1.000 |
| ## | accel\_forearm\_y -7.488e-02 2.917e+02 0.000 | 1.000 |
| ## | accel\_forearm\_z -1.275e-01 4.796e+02 0.000 | 1.000 |
| ## | magnet\_forearm\_x 4.579e-02 1.750e+02 0.000 | 1.000 |
| ## | magnet\_forearm\_y -1.938e-02 1.765e+02 0.000 | 1.000 |
| ## | magnet\_forearm\_z 1.386e-01 2.646e+02 0.001 | 1.000 |
| ## | accel\_forearm\_y.1 NA NA NA | NA |
| ## | accel\_forearm\_z.1 NA NA NA | NA |
| ## | magnet\_forearm\_x.1 NA NA NA | NA |
| ## | magnet\_forearm\_y.1 NA NA NA | NA |
| ## | magnet\_forearm\_z.1 NA NA NA | NA |
| ## |  |  |
| ## | (Dispersion parameter for binomial family taken to be 1) |  |
| ## |  |  |
| ## | Null deviance: 5.1432e+03 on 4009 degrees of freedom |  |
| ## | Residual deviance: 1.3222e-07 on 3862 degrees of freedom |  |
| ## | AIC: 296 |  |
| ## |  |  |
| ## Number of Fisher Scoring iterations: 25  **library**(ResourceSelection)  ## ResourceSelection 0.3-2 2017-02-28  **hoslem.test**(training**$**classe, **fitted**(fit))  ## Warning in Ops.factor(1, y): '-' not meaningful for factors ##  ## Hosmer and Lemeshow goodness of fit (GOF) test | | |

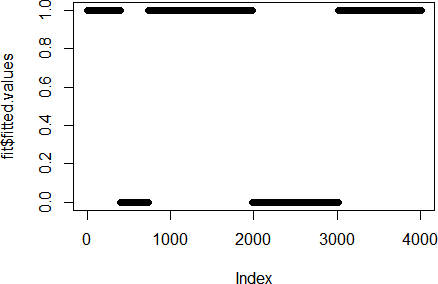
##

## data: training$classe, fitted(fit)

## X-squared = 4010, df = 8, p-value < 2.2e-16

*#plot the fitted model*

**plot**(fit**$**fitted.values)



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| pred <- **predict**(fit,newdata = testing,type = 'response')  ## Warning in predict.lm(object, newdata, se.fit, scale = 1, type =  ## ifelse(type == : prediction from a rank-deficient fit may be misleading  **library**(caret)  ## Loading required package: lattice ## Loading required package: ggplot2  *#with default prob cut 0.50*  testing**$**pred\_classe <- **ifelse**(pred**<**0.7,'yes','no')  **table**(testing**$**pred\_classe,testing**$**classe) | | | | | |
| ## ## |  | A | B C | D | E |
| ## | no | 0 | 0 14 | 0 | 0 |

*#training split of churn classes*

**round**(**table**(training**$**classe)**/nrow**(training),2)**\***100

##

## A B

C

2

D E

## 34 22

7 34

*# test split of churn classes*

**round**(**table**(testing**$**classe)**/nrow**(testing),2)**\***100

##

## ##

A

0

B C

0 100

D E

0 0

## #predicted split of churn classes

**round**(**table**(testing**$**pred\_classe)**/nrow**(testing),2)**\***100

##

## no ## 100

## #create confusion matrix

**confusionMatrix**(testing**$**classe,testing**$**classe)

## Confusion Matrix and Statistics

##

## Reference ## Prediction

##

## ## ## ## ##

A

B C D E

A

0

0

0

0

0

B

0

0

C

0

0

0 14

0

0

0

0

D E

0 0

0 0

0 0

0 0

0 0

## Overall Statistics

##

##

## ## ## ## ## ## ##

Accuracy : 1

95% CI : (0.7684, 1)

No Information Rate : 1 P-Value [Acc > NIR] : 1

Kappa : NaN

Mcnemar's Test P-Value : NA

## Statistics by Class: ##

##

## Sensitivity ## Specificity ## Pos Pred Value ## Neg Pred Value

Class: A Class: B Class: C Class: D Class: E

NA

1

NA NA

NA

1

NA NA

1

NA NA NA

NA

1

NA NA

NA

1

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 |
| *# load libraries* **library**(caret) **library**(rpart) |  |  |  |
| *# define training control*  *#train\_control<- trainControl(method="cv",* | *number=10)* |  |  |
| *# train the model*  *#model<- train(classe~.,data=training, trControl=train\_control, method="glm")*  *append predictions*  *pred<- cbind(testing,predictions)*  *# summarize results*  *confusion Matrix<- confusion Matrix(pred$predictions,pred$pred\_classe)* | | | |

Confusion Matrix and Statistics

Reference Prediction yes no

yes 54 48

no 170 1395

Accuracy : 0.8692

95% CI : (0.8521, 0.8851)

No Information Rate : 0.8656 P-Value [Acc > NIR] : 0.3492

Kappa : 0.2699 Mcnemar's Test P-Value : 2.503e-16

Sensitivity : 0.24107

Specificity : 0.96674 Pos Pred Value : 0.52941 Neg Pred Value : 0.89137 Prevalence : 0.13437 Detection Rate : 0.03239

Detection Prevalence : 0.06119 Balanced Accuracy : 0.60390

'Positive' Class : yes