Regression\_analysis\_Smartwatch

Sree

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#device <- list('Laptop', 'Smart\_Phone', 'Desktop\_Computer','Tablet','Smart\_Speaker','Smart\_Watch')  
cur\_file = 'encoded\_Affordance\_November19\_alldata\_'  
file\_name <- paste('C:/Users/sree2/Dropbox/SYR\_GAship/afforadance\_Study/Datasets/Encoded\_files/',cur\_file,'Smart\_Watch','\_data.csv',sep="")  
#file\_name  
library(readr)  
cur\_dev\_data <- read\_csv(file\_name)

## Warning: Missing column names filled in: 'X1' [1]

## Parsed with column specification:  
## cols(  
## .default = col\_integer(),  
## ResponseId = col\_character(),  
## device\_use = col\_number(),  
## Q20 = col\_number(),  
## scenario = col\_character(),  
## raw\_scenario = col\_character(),  
## org\_scenaio = col\_character()  
## )

## See spec(...) for full column specifications.

#head(cur\_dev\_data)

library(stringr)  
#Relationship\_3  
#location\_3  
#Q4\_feat3  
#Smart\_Speaker\_Q10\_feat6   
#Smart\_Speaker\_Q10\_feat7  
#Smart\_Speaker\_Q13\_feat1  
headers <- colnames(cur\_dev\_data)  
form\_fin <- ""  
for(var in 1:length(headers))  
{  
 #headers[1]  
 if(str\_detect(headers[var],'\_')) {  
 if(str\_detect(headers[var],'sce') == FALSE) {  
 if(str\_detect(headers[var],'device') == FALSE) {  
 if(str\_detect(headers[var],'actual') == FALSE){  
 if(str\_detect(headers[var],'Q4\_feat3') == FALSE) {  
 if(str\_detect(headers[var],'location\_3') == FALSE) {  
 if(str\_detect(headers[var],'Relationship\_3') == FALSE) {  
 #if(str\_detect(headers[var], 'Smart\_Speaker\_Q10\_feat6') == FALSE) {  
 #if(str\_detect(headers[var],'Smart\_Speaker\_Q10\_feat7') == FALSE) {  
 #if(str\_detect(headers[var],'Smart\_Speaker\_Q13\_feat1') == FALSE){  
 form\_fin <- paste(form\_fin,headers[var],sep="+")  
 }  
 }  
 }  
 #}  
 #}  
 #}  
 }  
 }  
 }  
 }  
}  
   
  
form\_fin <- substring(form\_fin,2)  
form\_fin <- paste("actual\_use",form\_fin,sep="~")  
#form\_fin

glmout <- glm(form\_fin, data=cur\_dev\_data)  
feats <- summary(glmout)#$coefficients[,4]  
feats

##   
## Call:  
## glm(formula = form\_fin, data = cur\_dev\_data)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.38024 -0.05263 -0.01850 0.01838 0.98739   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 0.0570192 0.0556992 1.024 0.30642   
## Q1\_feat1 0.0197318 0.0208643 0.946 0.34470   
## Q1\_feat2 0.0484383 0.0299325 1.618 0.10617   
## Q1\_feat3 0.0004255 0.0248374 0.017 0.98634   
## Q1\_feat4 0.0136719 0.0253883 0.539 0.59044   
## Q1\_feat5 -0.0117453 0.0184599 -0.636 0.52487   
## Q1\_feat7 0.0223193 0.0434196 0.514 0.60743   
## Q2\_feat1 -0.0411481 0.0420590 -0.978 0.32833   
## Q2\_feat2 0.0263217 0.0344654 0.764 0.44536   
## Q2\_feat3 -0.0236891 0.0435256 -0.544 0.58648   
## Q2\_feat5 -0.0589769 0.0447654 -1.317 0.18822   
## Q3\_feat1 -0.0144022 0.0183691 -0.784 0.43335   
## Q3\_feat2 -0.0126866 0.0168470 -0.753 0.45173   
## Q3\_feat3 -0.0058402 0.0181695 -0.321 0.74801   
## Q3\_feat4 0.0079919 0.0278289 0.287 0.77408   
## Q3\_feat6 -0.0284895 0.0408926 -0.697 0.48628   
## Q4\_feat1 -0.0039256 0.0165749 -0.237 0.81286   
## Q5\_feat1 0.0053682 0.0371918 0.144 0.88529   
## Q5\_feat2 -0.0131362 0.0362979 -0.362 0.71756   
## Q5\_feat3 -0.0047012 0.0363985 -0.129 0.89728   
## Q5\_feat4 0.0695930 0.0489789 1.421 0.15591   
## Q5\_feat6 0.0155377 0.0622937 0.249 0.80312   
## Q6\_feat1 0.0357898 0.0304041 1.177 0.23964   
## Q6\_feat2 -0.0227187 0.0229081 -0.992 0.32175   
## Q6\_feat3 0.0142333 0.0309720 0.460 0.64601   
## Q6\_feat4 0.0338887 0.0404199 0.838 0.40215   
## Q7\_feat1 0.0317164 0.0237294 1.337 0.18190   
## Q7\_feat2 0.0084214 0.0219167 0.384 0.70094   
## Q7\_feat3 0.0081111 0.0241817 0.335 0.73743   
## Q7\_feat5 0.0142028 0.0293003 0.485 0.62806   
## Q8\_feat1 0.0007948 0.0286126 0.028 0.97785   
## Q8\_feat2 -0.0497997 0.0328706 -1.515 0.13033   
## Q8\_feat3 0.0029159 0.0215302 0.135 0.89232   
## Q8\_feat5 -0.0481524 0.0381925 -1.261 0.20791   
## Q9\_feat1 -0.0084021 0.0187774 -0.447 0.65472   
## Q9\_feat2 -0.0004951 0.0190753 -0.026 0.97930   
## Q9\_feat3 0.0260485 0.0267707 0.973 0.33096   
## Q9\_feat4 -0.0430432 0.0343237 -1.254 0.21035   
## Q9\_feat6 0.0097030 0.0402962 0.241 0.80980   
## Q10\_feat1 -0.0030649 0.0208778 -0.147 0.88334   
## Q10\_feat2 0.0118430 0.0177234 0.668 0.50427   
## Q10\_feat3 0.0350175 0.0240495 1.456 0.14593   
## Q10\_feat4 0.0396035 0.0251056 1.577 0.11525   
## Q10\_feat6 0.1829275 0.0363317 5.035 6.45e-07 \*\*\*  
## Q10\_feat7 0.0525284 0.0449805 1.168 0.24338   
## Q11\_feat1 -0.0129679 0.0183945 -0.705 0.48111   
## Q11\_feat2 0.0025253 0.0385373 0.066 0.94778   
## Q11\_feat3 0.0004694 0.0340090 0.014 0.98899   
## Q11\_feat5 -0.0099866 0.0540406 -0.185 0.85345   
## Q12\_feat1 0.0339665 0.0268587 1.265 0.20653   
## Q12\_feat2 0.0065675 0.0253953 0.259 0.79603   
## Q12\_feat3 0.0111538 0.0247050 0.451 0.65182   
## Q12\_feat5 0.0161258 0.0311581 0.518 0.60498   
## Q13\_feat1 -0.0723156 0.0271526 -2.663 0.00796 \*\*   
## Q13\_feat2 -0.0367337 0.0279595 -1.314 0.18944   
## Q13\_feat4 -0.0767310 0.0386709 -1.984 0.04772 \*   
## Smart\_Watch\_Q1\_feat1 0.0208770 0.0344136 0.607 0.54433   
## Smart\_Watch\_Q1\_feat2 -0.0002441 0.0799737 -0.003 0.99757   
## Smart\_Watch\_Q1\_feat3 0.0874950 0.1111396 0.787 0.43147   
## Smart\_Watch\_Q1\_feat4 -0.0418827 0.1355234 -0.309 0.75740   
## Smart\_Watch\_Q1\_feat5 -0.0148054 0.0435691 -0.340 0.73412   
## Smart\_Watch\_Q1\_feat7 -0.0154648 0.1053318 -0.147 0.88333   
## Smart\_Watch\_Q2\_feat1 0.1972784 0.1168411 1.688 0.09188 .   
## Smart\_Watch\_Q2\_feat2 0.0025994 0.1406805 0.018 0.98526   
## Smart\_Watch\_Q2\_feat3 0.1697867 0.1145131 1.483 0.13872   
## Smart\_Watch\_Q2\_feat5 0.2221778 0.1224077 1.815 0.07005 .   
## Smart\_Watch\_Q3\_feat1 -0.0117838 0.0369576 -0.319 0.74996   
## Smart\_Watch\_Q3\_feat2 -0.0215183 0.0326097 -0.660 0.50961   
## Smart\_Watch\_Q3\_feat3 0.0362712 0.0389329 0.932 0.35193   
## Smart\_Watch\_Q3\_feat4 -0.0416110 0.0651668 -0.639 0.52339   
## Smart\_Watch\_Q3\_feat6 -0.0300197 0.0792723 -0.379 0.70506   
## Smart\_Watch\_Q4\_feat1 0.0400796 0.0387133 1.035 0.30098   
## Smart\_Watch\_Q5\_feat1 -0.0629511 0.1365353 -0.461 0.64493   
## Smart\_Watch\_Q5\_feat2 -0.1004921 0.1378031 -0.729 0.46616   
## Smart\_Watch\_Q5\_feat3 0.0164278 0.1176101 0.140 0.88896   
## Smart\_Watch\_Q5\_feat4 -0.7044666 0.1591743 -4.426 1.15e-05 \*\*\*  
## Smart\_Watch\_Q5\_feat6 0.1360445 0.2621210 0.519 0.60396   
## Smart\_Watch\_Q6\_feat1 0.2183144 0.0779747 2.800 0.00529 \*\*   
## Smart\_Watch\_Q6\_feat2 0.0838733 0.0620023 1.353 0.17668   
## Smart\_Watch\_Q6\_feat3 0.1777388 0.0804520 2.209 0.02756 \*   
## Smart\_Watch\_Q6\_feat4 0.2073202 0.0870381 2.382 0.01755 \*   
## Smart\_Watch\_Q7\_feat1 0.1370861 0.0893269 1.535 0.12543   
## Smart\_Watch\_Q7\_feat2 0.0255884 0.0660606 0.387 0.69865   
## Smart\_Watch\_Q7\_feat3 0.1069049 0.0928842 1.151 0.25024   
## Smart\_Watch\_Q7\_feat5 0.1320660 0.1029016 1.283 0.19987   
## Smart\_Watch\_Q8\_feat1 0.1863806 0.1340866 1.390 0.16508   
## Smart\_Watch\_Q8\_feat2 0.1671622 0.1403282 1.191 0.23407   
## Smart\_Watch\_Q8\_feat3 0.0142993 0.0500842 0.286 0.77536   
## Smart\_Watch\_Q8\_feat5 0.1921503 0.1455214 1.320 0.18723   
## Smart\_Watch\_Q9\_feat1 0.0047648 0.0460682 0.103 0.91766   
## Smart\_Watch\_Q9\_feat2 0.0074818 0.0480756 0.156 0.87638   
## Smart\_Watch\_Q9\_feat3 0.0476719 0.0984489 0.484 0.62841   
## Smart\_Watch\_Q9\_feat4 -0.0672729 0.0763329 -0.881 0.37853   
## Smart\_Watch\_Q9\_feat6 0.1157637 0.1158670 0.999 0.31817   
## Smart\_Watch\_Q10\_feat1 0.0103386 0.0336127 0.308 0.75852   
## Smart\_Watch\_Q10\_feat2 0.0079943 0.0363124 0.220 0.82583   
## Smart\_Watch\_Q10\_feat3 0.0303656 0.0524079 0.579 0.56255   
## Smart\_Watch\_Q10\_feat4 0.0126838 0.0430793 0.294 0.76854   
## Smart\_Watch\_Q10\_feat6 0.1919730 0.2591328 0.741 0.45911   
## Smart\_Watch\_Q10\_feat7 -0.1222977 0.2719939 -0.450 0.65315   
## Smart\_Watch\_Q11\_feat1 0.0048775 0.0331168 0.147 0.88296   
## Smart\_Watch\_Q11\_feat2 0.0742256 0.0901647 0.823 0.41073   
## Smart\_Watch\_Q11\_feat3 -0.0600709 0.0708570 -0.848 0.39692   
## Smart\_Watch\_Q11\_feat5 0.0893948 0.1014754 0.881 0.37872   
## Smart\_Watch\_Q12\_feat1 0.0642983 0.1037012 0.620 0.53549   
## Smart\_Watch\_Q12\_feat2 0.0055905 0.0765516 0.073 0.94181   
## Smart\_Watch\_Q12\_feat3 -0.0323700 0.0480819 -0.673 0.50108   
## Smart\_Watch\_Q12\_feat5 0.0415151 0.1095647 0.379 0.70490   
## Smart\_Watch\_Q13\_feat1 0.0296816 0.0819689 0.362 0.71741   
## Smart\_Watch\_Q13\_feat2 0.0227817 0.0611635 0.372 0.70968   
## Smart\_Watch\_Q13\_feat4 0.0270439 0.0940126 0.288 0.77371   
## location\_1 -0.0070300 0.0184751 -0.381 0.70371   
## location\_2 0.0026418 0.0171619 0.154 0.87772   
## Relationship\_1 -0.0147666 0.0170936 -0.864 0.38803   
## Relationship\_2 -0.0200151 0.0178972 -1.118 0.26390   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.02813147)  
##   
## Null deviance: 153.12 on 676 degrees of freedom  
## Residual deviance: 15.81 on 562 degrees of freedom  
## AIC: -390.27  
##   
## Number of Fisher Scoring iterations: 2

#fin\_feats <- feats[feats<=0.05]  
#fin\_feats  
#file\_path = "C:/Users/sree2/Dropbox/SYR\_GAship/afforadance\_Study/ML models/logistic\_Regression\_p\_values/"  
#file\_fin = paste(file\_path,cur\_file,cur\_device,"\_pvalues.csv",sep="")  
#column\_names = c('Features','p\_values')  
#write.csv(fin\_feats,file\_fin,)