Regression\_analysis\_SmartSpeakers

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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\_Speaker','\_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   
## -0.19295 -0.04786 -0.01651 0.00895 0.95687   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 7.269e-02 4.927e-02 1.476 0.14062   
## Q1\_feat1 7.336e-03 1.725e-02 0.425 0.67073   
## Q1\_feat2 -4.856e-02 2.588e-02 -1.876 0.06118 .   
## Q1\_feat3 -3.135e-03 2.146e-02 -0.146 0.88394   
## Q1\_feat4 -2.147e-02 2.306e-02 -0.931 0.35216   
## Q1\_feat5 8.616e-03 1.594e-02 0.540 0.58913   
## Q1\_feat7 -5.053e-02 4.207e-02 -1.201 0.23021   
## Q2\_feat1 -5.485e-02 3.430e-02 -1.599 0.11028   
## Q2\_feat2 -1.808e-02 2.866e-02 -0.631 0.52849   
## Q2\_feat3 -2.100e-02 3.507e-02 -0.599 0.54948   
## Q2\_feat5 -7.385e-02 3.662e-02 -2.017 0.04421 \*   
## Q3\_feat1 -1.594e-02 1.578e-02 -1.010 0.31279   
## Q3\_feat2 -1.097e-02 1.517e-02 -0.723 0.47018   
## Q3\_feat3 1.336e-02 1.629e-02 0.820 0.41243   
## Q3\_feat4 -1.340e-03 2.327e-02 -0.058 0.95411   
## Q3\_feat6 4.945e-02 3.726e-02 1.327 0.18503   
## Q4\_feat1 -9.593e-03 1.498e-02 -0.641 0.52209   
## Q5\_feat1 3.252e-02 3.117e-02 1.043 0.29729   
## Q5\_feat2 1.175e-02 3.182e-02 0.369 0.71198   
## Q5\_feat3 -1.720e-02 3.099e-02 -0.555 0.57916   
## Q5\_feat4 2.524e-02 3.747e-02 0.674 0.50083   
## Q5\_feat6 -6.911e-03 5.555e-02 -0.124 0.90103   
## Q6\_feat1 7.490e-02 2.650e-02 2.826 0.00487 \*\*  
## Q6\_feat2 3.309e-02 1.978e-02 1.672 0.09498 .   
## Q6\_feat3 7.152e-02 2.664e-02 2.685 0.00747 \*\*  
## Q6\_feat4 3.984e-02 3.409e-02 1.169 0.24307   
## Q7\_feat1 4.307e-03 1.986e-02 0.217 0.82836   
## Q7\_feat2 -3.218e-04 2.034e-02 -0.016 0.98738   
## Q7\_feat3 -2.343e-02 2.135e-02 -1.098 0.27288   
## Q7\_feat5 1.640e-03 2.577e-02 0.064 0.94926   
## Q8\_feat1 3.068e-02 2.318e-02 1.324 0.18609   
## Q8\_feat2 1.639e-02 2.497e-02 0.656 0.51192   
## Q8\_feat3 -1.120e-02 1.845e-02 -0.607 0.54399   
## Q8\_feat5 1.493e-02 3.021e-02 0.494 0.62129   
## Q9\_feat1 1.576e-02 1.645e-02 0.958 0.33844   
## Q9\_feat2 1.774e-03 1.671e-02 0.106 0.91550   
## Q9\_feat3 2.661e-02 2.368e-02 1.124 0.26162   
## Q9\_feat4 2.215e-03 2.587e-02 0.086 0.93179   
## Q9\_feat6 2.733e-02 3.471e-02 0.788 0.43131   
## Q10\_feat1 5.045e-03 1.788e-02 0.282 0.77795   
## Q10\_feat2 1.271e-02 1.553e-02 0.818 0.41344   
## Q10\_feat3 8.524e-03 2.046e-02 0.417 0.67705   
## Q10\_feat4 -2.739e-03 2.061e-02 -0.133 0.89432   
## Q10\_feat6 9.116e-02 3.086e-02 2.954 0.00327 \*\*  
## Q10\_feat7 5.736e-02 3.778e-02 1.518 0.12956   
## Q11\_feat1 -2.179e-02 1.596e-02 -1.365 0.17285   
## Q11\_feat2 -1.560e-02 3.224e-02 -0.484 0.62870   
## Q11\_feat3 -1.587e-02 2.802e-02 -0.566 0.57138   
## Q11\_feat5 -3.684e-02 4.558e-02 -0.808 0.41925   
## Q12\_feat1 -5.145e-03 2.326e-02 -0.221 0.82506   
## Q12\_feat2 2.116e-02 2.075e-02 1.019 0.30841   
## Q12\_feat3 8.910e-03 2.009e-02 0.443 0.65759   
## Q12\_feat5 1.390e-03 2.674e-02 0.052 0.95857   
## Q13\_feat1 -4.233e-02 2.327e-02 -1.819 0.06949 .   
## Q13\_feat2 -3.796e-02 2.368e-02 -1.603 0.10939   
## Q13\_feat4 -6.647e-02 3.224e-02 -2.061 0.03972 \*   
## Smart\_Speaker\_Q1\_feat1 3.330e-01 5.667e-01 0.588 0.55701   
## Smart\_Speaker\_Q1\_feat2 3.154e-01 5.430e-01 0.581 0.56158   
## Smart\_Speaker\_Q1\_feat3 -6.799e-01 8.057e-01 -0.844 0.39912   
## Smart\_Speaker\_Q1\_feat4 1.114e+00 7.509e-01 1.484 0.13840   
## Smart\_Speaker\_Q1\_feat5 -1.081e+00 7.255e-01 -1.490 0.13676   
## Smart\_Speaker\_Q1\_feat7 4.475e-01 5.658e-01 0.791 0.42935   
## Smart\_Speaker\_Q2\_feat1 -3.365e-01 5.933e-01 -0.567 0.57079   
## Smart\_Speaker\_Q2\_feat2 1.630e-01 2.462e-01 0.662 0.50828   
## Smart\_Speaker\_Q2\_feat3 2.264e-02 1.762e-01 0.128 0.89782   
## Smart\_Speaker\_Q2\_feat5 1.571e-01 2.550e-01 0.616 0.53793   
## Smart\_Speaker\_Q3\_feat1 -1.665e-02 1.210e-01 -0.138 0.89065   
## Smart\_Speaker\_Q3\_feat2 2.263e-02 5.584e-02 0.405 0.68551   
## Smart\_Speaker\_Q3\_feat3 -3.093e-02 1.702e-01 -0.182 0.85587   
## Smart\_Speaker\_Q3\_feat4 -8.423e-03 1.163e-01 -0.072 0.94228   
## Smart\_Speaker\_Q3\_feat6 8.566e-03 1.812e-01 0.047 0.96232   
## Smart\_Speaker\_Q4\_feat1 -1.609e-03 4.674e-02 -0.034 0.97256   
## Smart\_Speaker\_Q5\_feat1 -4.446e-02 1.178e-01 -0.377 0.70595   
## Smart\_Speaker\_Q5\_feat2 1.206e-02 4.849e-02 0.249 0.80371   
## Smart\_Speaker\_Q5\_feat3 2.144e-03 8.586e-02 0.025 0.98009   
## Smart\_Speaker\_Q5\_feat4 -1.716e-02 5.206e-02 -0.330 0.74186   
## Smart\_Speaker\_Q5\_feat6 3.181e-02 1.882e-01 0.169 0.86586   
## Smart\_Speaker\_Q6\_feat1 -4.880e-03 4.787e-02 -0.102 0.91883   
## Smart\_Speaker\_Q6\_feat2 -1.171e-02 5.115e-02 -0.229 0.81896   
## Smart\_Speaker\_Q6\_feat3 -7.185e-03 6.150e-02 -0.117 0.90704   
## Smart\_Speaker\_Q6\_feat4 4.452e-02 1.171e-01 0.380 0.70396   
## Smart\_Speaker\_Q7\_feat1 8.712e-02 3.114e-01 0.280 0.77980   
## Smart\_Speaker\_Q7\_feat2 -1.296e-01 2.540e-01 -0.510 0.60990   
## Smart\_Speaker\_Q7\_feat3 9.656e-02 3.271e-01 0.295 0.76797   
## Smart\_Speaker\_Q7\_feat5 9.744e-02 3.253e-01 0.300 0.76463   
## Smart\_Speaker\_Q8\_feat1 -6.628e-03 7.116e-02 -0.093 0.92583   
## Smart\_Speaker\_Q8\_feat2 -1.373e-02 6.201e-02 -0.222 0.82478   
## Smart\_Speaker\_Q8\_feat3 -1.706e-03 5.467e-02 -0.031 0.97511   
## Smart\_Speaker\_Q8\_feat5 8.627e-03 1.047e-01 0.082 0.93438   
## Smart\_Speaker\_Q9\_feat1 2.548e-01 5.114e-01 0.498 0.61847   
## Smart\_Speaker\_Q9\_feat2 1.451e-03 7.423e-02 0.020 0.98441   
## Smart\_Speaker\_Q9\_feat3 -9.837e-02 2.851e-01 -0.345 0.73023   
## Smart\_Speaker\_Q9\_feat4 -6.498e-02 2.765e-01 -0.235 0.81425   
## Smart\_Speaker\_Q9\_feat6 -8.042e-03 3.278e-01 -0.025 0.98044   
## Smart\_Speaker\_Q10\_feat1 4.020e-01 5.551e-01 0.724 0.46925   
## Smart\_Speaker\_Q10\_feat2 2.577e-01 3.777e-01 0.682 0.49540   
## Smart\_Speaker\_Q10\_feat3 2.597e-01 4.651e-01 0.558 0.57672   
## Smart\_Speaker\_Q10\_feat4 7.709e-03 4.733e-02 0.163 0.87066   
## Smart\_Speaker\_Q11\_feat1 1.365e-02 7.115e-02 0.192 0.84787   
## Smart\_Speaker\_Q11\_feat2 -1.258e-02 1.544e-01 -0.081 0.93511   
## Smart\_Speaker\_Q11\_feat3 -1.646e-02 1.687e-01 -0.098 0.92229   
## Smart\_Speaker\_Q11\_feat5 -4.716e-02 2.090e-01 -0.226 0.82152   
## Smart\_Speaker\_Q12\_feat1 4.826e-02 1.911e-01 0.253 0.80072   
## Smart\_Speaker\_Q12\_feat2 -8.351e-02 1.661e-01 -0.503 0.61540   
## Smart\_Speaker\_Q12\_feat3 -5.872e-02 3.276e-01 -0.179 0.85781   
## Smart\_Speaker\_Q12\_feat5 1.240e-02 2.144e-01 0.058 0.95390   
## Smart\_Speaker\_Q13\_feat2 1.994e-01 5.162e-01 0.386 0.69944   
## Smart\_Speaker\_Q13\_feat4 2.459e-01 5.195e-01 0.473 0.63618   
## location\_1 -7.194e-03 1.785e-02 -0.403 0.68707   
## location\_2 -8.577e-05 1.492e-02 -0.006 0.99542   
## Relationship\_1 -2.984e-02 1.518e-02 -1.965 0.04984 \*   
## Relationship\_2 -4.811e-03 1.689e-02 -0.285 0.77583   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for gaussian family taken to be 0.02301428)  
##   
## Null deviance: 107.063 on 681 degrees of freedom  
## Residual deviance: 13.118 on 570 degrees of freedom  
## AIC: -533.17  
##   
## 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,)