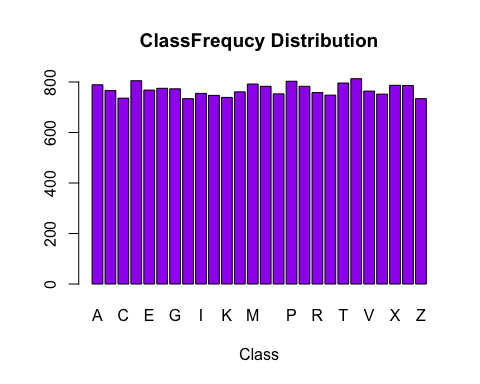
Character Classificatin UCI ML

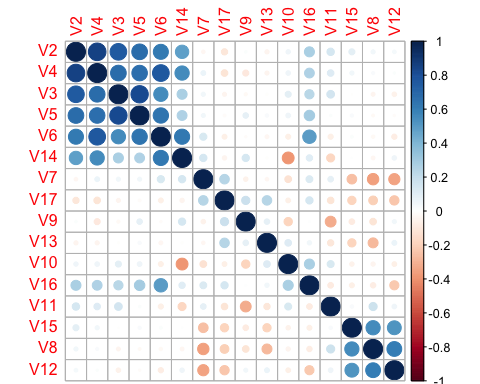
rm(list=ls()) Loading and Preprocessing : removeing near zero variance predictors and high correlated predictors

Data <- read.csv("./letter-recognition.data",sep=",",header=FALSE)  
#Class Frequency Distribution  
y <- Data[,1]  
barplot(table(y),xlab="Class",col="purple",main="ClassFrequcy Distribution")  
library(corrplot)  
library(caret)

## Loading required package: lattice  
## Loading required package: ggplot2



x <- Data[,-1]  
#Correlations between predictors.  
correlations <-cor(x)  
corrplot(correlations, order = "hclust")



x<-x[,-findCorrelation(correlations,cutoff=0.75)]  
nearZeroVar(x)

## integer(0)

smp\_size <- floor(0.75 \* nrow(x))  
  
## set the seed to make your partition reproductible  
set.seed(123)  
train\_ind <- sample(seq\_len(nrow(x)), size = smp\_size)  
  
trainX <- x[train\_ind, ]  
trainY <- y[train\_ind]  
testX <- x[-train\_ind, ]  
testY<-y[-train\_ind]

Linear Models

ldaModel<- train(x = trainX,y = trainY,method = "lda2",metric = "Kappa",preProc = c("center", "scale"))

## Loading required package: MASS

ldaModel

## Linear Discriminant Analysis   
##   
## 15000 samples  
## 13 predictor  
## 26 classes: 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'   
##   
## Pre-processing: centered, scaled   
## Resampling: Bootstrapped (25 reps)   
##   
## Summary of sample sizes: 15000, 15000, 15000, 15000, 15000, 15000, ...   
##   
## Resampling results across tuning parameters:  
##   
## dimen Accuracy Kappa Accuracy SD Kappa SD   
## 1 0.1685297 0.1355126 0.008434755 0.008705092  
## 2 0.3497718 0.3236751 0.006712291 0.006945867  
## 3 0.4289124 0.4060080 0.015855319 0.016455423  
## 4 0.5390830 0.5205938 0.007712305 0.008013558  
## 5 0.5833730 0.5666671 0.006934202 0.007205122  
## 6 0.6151006 0.5996624 0.008165075 0.008487258  
## 7 0.6250795 0.6100264 0.009064244 0.009421349  
## 8 0.6726983 0.6595546 0.006922812 0.007192980  
## 9 0.6816396 0.6688550 0.006811382 0.007074126  
## 10 0.6904524 0.6780292 0.006649750 0.006907253  
## 11 0.6867831 0.6742183 0.007103359 0.007377300  
## 12 0.6925854 0.6802618 0.007167037 0.007444857  
## 13 0.6915845 0.6792207 0.006972897 0.007243935  
##   
## Kappa was used to select the optimal model using the largest value.  
## The final value used for the model was dimen = 12.

ldaPred <- predict(ldaModel,testX)  
confusionMatrix(ldaPred,testY)

## Confusion Matrix and Statistics  
##   
## Reference  
## Prediction A B C D E F G H I J K L M N O P  
## A 156 0 0 1 0 0 6 0 0 1 0 7 2 0 3 0  
## B 1 132 3 5 16 12 7 5 1 4 6 8 1 0 0 5  
## C 0 0 142 0 22 0 27 0 0 0 2 3 0 0 0 0  
## D 0 6 0 143 0 3 3 16 2 7 4 0 0 5 12 1  
## E 0 0 9 0 78 0 3 0 3 0 3 5 0 0 0 0  
## F 0 0 4 0 0 121 0 1 1 2 0 0 0 0 0 15  
## G 0 1 9 1 29 2 91 0 0 0 2 8 0 0 7 3  
## H 1 7 0 3 0 2 7 83 0 0 3 1 8 7 34 3  
## I 0 2 0 2 1 1 0 1 169 9 0 2 0 0 0 0  
## J 10 0 0 3 0 0 0 0 4 132 0 10 0 2 0 0  
## K 2 7 12 0 10 2 16 20 0 0 111 3 0 2 5 2  
## L 0 0 0 0 0 0 0 0 0 0 0 139 0 0 0 0  
## M 5 0 1 0 0 0 1 1 0 0 0 0 201 9 1 0  
## N 0 0 0 5 0 1 1 10 0 0 2 0 5 134 0 1  
## O 6 1 4 8 1 0 1 12 0 2 1 0 1 3 123 2  
## P 0 0 0 0 0 20 0 5 2 8 0 0 0 0 0 142  
## Q 0 7 4 0 10 0 15 2 0 1 1 5 0 0 0 1  
## R 0 13 0 6 2 1 7 14 1 0 22 0 1 0 0 0  
## S 6 11 4 6 10 10 6 3 9 16 0 3 0 0 0 0  
## T 1 0 0 0 2 7 0 0 0 0 0 0 0 0 0 4  
## U 3 0 0 0 2 1 0 7 0 0 4 0 1 2 0 0  
## V 0 0 0 0 0 1 0 0 0 0 3 0 0 0 0 2  
## W 2 0 0 0 0 1 5 0 0 0 1 0 8 13 8 1  
## X 3 10 0 8 19 2 5 6 2 3 6 1 0 2 5 0  
## Y 2 0 0 0 0 1 0 0 0 0 0 0 0 0 0 3  
## Z 0 0 1 0 6 0 0 0 0 0 0 0 0 0 0 0  
## Reference  
## Prediction Q R S T U V W X Y Z  
## A 3 0 8 0 0 0 0 0 0 0  
## B 7 12 20 4 0 1 0 2 0 1  
## C 0 0 0 0 2 0 0 0 0 0  
## D 0 11 0 0 1 0 0 10 1 0  
## E 2 0 1 2 0 0 0 3 0 10  
## F 0 0 6 22 0 8 0 0 14 0  
## G 6 0 2 4 0 0 0 0 0 0  
## H 0 7 0 8 12 3 10 0 4 0  
## I 0 0 5 0 0 0 0 6 0 4  
## J 0 0 2 0 0 0 0 0 0 2  
## K 6 13 0 6 2 2 1 4 0 0  
## L 3 0 0 0 1 0 0 0 0 0  
## M 0 0 0 0 3 0 2 0 0 0  
## N 1 2 0 0 10 0 7 0 1 0  
## O 22 0 0 0 8 3 0 1 1 1  
## P 0 0 0 3 0 0 0 0 0 0  
## Q 108 0 0 0 0 0 0 4 5 0  
## R 0 141 9 0 0 3 0 3 0 2  
## S 8 0 64 2 0 0 0 12 8 26  
## T 0 0 0 129 0 0 0 1 9 1  
## U 0 0 0 0 171 0 0 10 2 0  
## V 3 0 0 0 0 164 0 0 17 0  
## W 2 1 0 0 2 6 177 0 0 0  
## X 0 6 12 3 0 0 0 138 1 5  
## Y 0 0 4 5 0 4 0 6 108 0  
## Z 1 0 46 0 0 0 0 1 0 144  
##   
## Overall Statistics  
##   
## Accuracy : 0.6882   
## 95% CI : (0.6752, 0.701)  
## No Information Rate : 0.0456   
## P-Value [Acc > NIR] : < 2.2e-16   
##   
## Kappa : 0.6757   
## Mcnemar's Test P-Value : NA   
##   
## Statistics by Class:  
##   
## Class: A Class: B Class: C Class: D Class: E Class: F  
## Sensitivity 0.7879 0.6701 0.7358 0.7487 0.3750 0.6436  
## Specificity 0.9935 0.9748 0.9884 0.9829 0.9914 0.9848  
## Pos Pred Value 0.8342 0.5217 0.7172 0.6356 0.6555 0.6237  
## Neg Pred Value 0.9913 0.9863 0.9894 0.9899 0.9734 0.9861  
## Prevalence 0.0396 0.0394 0.0386 0.0382 0.0416 0.0376  
## Detection Rate 0.0312 0.0264 0.0284 0.0286 0.0156 0.0242  
## Detection Prevalence 0.0374 0.0506 0.0396 0.0450 0.0238 0.0388  
## Balanced Accuracy 0.8907 0.8224 0.8621 0.8658 0.6832 0.8142  
## Class: G Class: H Class: I Class: J Class: K Class: L  
## Sensitivity 0.4527 0.4462 0.8711 0.7135 0.6491 0.7128  
## Specificity 0.9846 0.9751 0.9931 0.9931 0.9762 0.9992  
## Pos Pred Value 0.5515 0.4089 0.8366 0.8000 0.4912 0.9720  
## Neg Pred Value 0.9772 0.9785 0.9948 0.9890 0.9874 0.9885  
## Prevalence 0.0402 0.0372 0.0388 0.0370 0.0342 0.0390  
## Detection Rate 0.0182 0.0166 0.0338 0.0264 0.0222 0.0278  
## Detection Prevalence 0.0330 0.0406 0.0404 0.0330 0.0452 0.0286  
## Balanced Accuracy 0.7187 0.7107 0.9321 0.8533 0.8127 0.8560  
## Class: M Class: N Class: O Class: P Class: Q Class: R  
## Sensitivity 0.8816 0.7486 0.6212 0.7676 0.6279 0.7306  
## Specificity 0.9952 0.9905 0.9838 0.9921 0.9886 0.9825  
## Pos Pred Value 0.8973 0.7444 0.6119 0.7889 0.6626 0.6267  
## Neg Pred Value 0.9943 0.9907 0.9844 0.9911 0.9868 0.9891  
## Prevalence 0.0456 0.0358 0.0396 0.0370 0.0344 0.0386  
## Detection Rate 0.0402 0.0268 0.0246 0.0284 0.0216 0.0282  
## Detection Prevalence 0.0448 0.0360 0.0402 0.0360 0.0326 0.0450  
## Balanced Accuracy 0.9384 0.8695 0.8025 0.8798 0.8083 0.8565  
## Class: S Class: T Class: U Class: V Class: W Class: X  
## Sensitivity 0.3575 0.6862 0.8066 0.8454 0.8985 0.6866  
## Specificity 0.9710 0.9948 0.9933 0.9946 0.9896 0.9794  
## Pos Pred Value 0.3137 0.8377 0.8424 0.8632 0.7797 0.5823  
## Neg Pred Value 0.9760 0.9878 0.9915 0.9938 0.9958 0.9868  
## Prevalence 0.0358 0.0376 0.0424 0.0388 0.0394 0.0402  
## Detection Rate 0.0128 0.0258 0.0342 0.0328 0.0354 0.0276  
## Detection Prevalence 0.0408 0.0308 0.0406 0.0380 0.0454 0.0474  
## Balanced Accuracy 0.6643 0.8405 0.9000 0.9200 0.9440 0.8330  
## Class: Y Class: Z  
## Sensitivity 0.6316 0.7347  
## Specificity 0.9948 0.9886  
## Pos Pred Value 0.8120 0.7236  
## Neg Pred Value 0.9871 0.9892  
## Prevalence 0.0342 0.0392  
## Detection Rate 0.0216 0.0288  
## Detection Prevalence 0.0266 0.0398  
## Balanced Accuracy 0.8132 0.8616

plsdaModel <- train(x = trainX,y = trainY,method = "pls",tuneGrid = expand.grid(.ncomp = 1:2),preProc = c("center","scale"),metric = "Kappa")

## Loading required package: pls  
##   
## Attaching package: 'pls'  
##   
## The following object is masked from 'package:caret':  
##   
## R2  
##   
## The following object is masked from 'package:corrplot':  
##   
## corrplot  
##   
## The following object is masked from 'package:stats':  
##   
## loadings

plsdaModel

## Partial Least Squares   
##   
## 15000 samples  
## 13 predictor  
## 26 classes: 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'   
##   
## Pre-processing: centered, scaled   
## Resampling: Bootstrapped (25 reps)   
##   
## Summary of sample sizes: 15000, 15000, 15000, 15000, 15000, 15000, ...   
##   
## Resampling results across tuning parameters:  
##   
## ncomp Accuracy Kappa Accuracy SD Kappa SD   
## 1 0.07420849 0.0372415 0.003271222 0.002700414  
## 2 0.17892449 0.1469015 0.010474731 0.010607809  
##   
## Kappa was used to select the optimal model using the largest value.  
## The final value used for the model was ncomp = 2.

plsdaPred <- predict(plsdaModel,testX)  
confusionMatrix(plsdaPred,testY)

## Confusion Matrix and Statistics  
##   
## Reference  
## Prediction A B C D E F G H I J K L M N O P  
## A 159 41 9 67 11 3 54 53 17 61 45 95 4 2 85 4  
## B 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## C 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## D 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0  
## E 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## F 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## G 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## H 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## I 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## J 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## K 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## L 0 47 4 25 30 2 52 2 6 21 23 51 0 0 4 0  
## M 28 36 16 34 12 10 37 91 3 5 47 3 214 81 76 10  
## N 0 1 1 0 0 0 0 0 0 0 0 0 0 0 3 0  
## O 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## P 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## Q 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0  
## R 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## S 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## T 0 1 64 12 17 146 5 10 13 8 18 1 0 0 1 74  
## U 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## V 0 0 0 0 0 0 0 2 0 0 1 0 0 0 0 0  
## W 11 3 1 12 6 12 9 12 0 1 8 6 10 96 21 25  
## X 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  
## Y 0 0 1 9 0 11 0 3 0 0 4 0 0 0 3 65  
## Z 0 68 97 30 132 4 44 13 155 89 24 39 0 0 5 7  
## Reference  
## Prediction Q R S T U V W X Y Z  
## A 51 125 22 2 0 0 0 50 2 14  
## B 0 0 0 0 0 0 0 0 0 0  
## C 0 0 0 0 0 0 0 0 0 0  
## D 0 0 0 0 0 0 0 0 0 0  
## E 0 0 0 0 0 0 0 0 0 0  
## F 0 0 0 0 0 0 0 0 0 0  
## G 0 0 0 0 0 0 0 0 0 0  
## H 0 0 0 0 0 0 0 0 0 0  
## I 0 0 0 0 0 0 0 0 0 0  
## J 0 0 0 0 0 0 0 0 0 0  
## K 0 0 0 0 0 0 0 0 0 0  
## L 10 14 15 1 0 0 0 14 0 8  
## M 72 50 5 11 48 10 37 2 8 3  
## N 0 0 1 0 0 0 0 0 0 1  
## O 0 0 0 0 0 0 0 0 0 0  
## P 0 0 0 0 0 0 0 0 0 0  
## Q 0 0 0 0 0 0 0 0 0 0  
## R 0 0 0 0 0 0 0 0 0 0  
## S 0 0 0 0 0 0 0 0 0 0  
## T 0 0 24 154 57 0 0 32 82 9  
## U 0 0 0 0 0 0 0 0 0 0  
## V 0 0 0 0 0 12 0 0 3 0  
## W 36 2 4 2 78 72 160 1 30 0  
## X 0 0 0 0 0 0 0 0 0 0  
## Y 2 0 3 14 29 100 0 1 46 4  
## Z 1 2 105 4 0 0 0 101 0 157  
##   
## Overall Statistics  
##   
## Accuracy : 0.1908   
## 95% CI : (0.18, 0.202)  
## No Information Rate : 0.0456   
## P-Value [Acc > NIR] : < 2.2e-16   
##   
## Kappa : 0.1571   
## Mcnemar's Test P-Value : NA   
##   
## Statistics by Class:  
##   
## Class: A Class: B Class: C Class: D Class: E Class: F  
## Sensitivity 0.8030 0.0000 0.0000 0.005236 0.0000 0.0000  
## Specificity 0.8299 1.0000 1.0000 0.999792 1.0000 1.0000  
## Pos Pred Value 0.1629 NaN NaN 0.500000 NaN NaN  
## Neg Pred Value 0.9903 0.9606 0.9614 0.961985 0.9584 0.9624  
## Prevalence 0.0396 0.0394 0.0386 0.038200 0.0416 0.0376  
## Detection Rate 0.0318 0.0000 0.0000 0.000200 0.0000 0.0000  
## Detection Prevalence 0.1952 0.0000 0.0000 0.000400 0.0000 0.0000  
## Balanced Accuracy 0.8164 0.5000 0.5000 0.502514 0.5000 0.5000  
## Class: G Class: H Class: I Class: J Class: K Class: L  
## Sensitivity 0.0000 0.0000 0.0000 0.000 0.0000 0.2615  
## Specificity 1.0000 1.0000 1.0000 1.000 1.0000 0.9421  
## Pos Pred Value NaN NaN NaN NaN NaN 0.1550  
## Neg Pred Value 0.9598 0.9628 0.9612 0.963 0.9658 0.9692  
## Prevalence 0.0402 0.0372 0.0388 0.037 0.0342 0.0390  
## Detection Rate 0.0000 0.0000 0.0000 0.000 0.0000 0.0102  
## Detection Prevalence 0.0000 0.0000 0.0000 0.000 0.0000 0.0658  
## Balanced Accuracy 0.5000 0.5000 0.5000 0.500 0.5000 0.6018  
## Class: M Class: N Class: O Class: P Class: Q Class: R  
## Sensitivity 0.9386 0.0000 0.0000 0.000 0.0000 0.0000  
## Specificity 0.8460 0.9985 1.0000 1.000 0.9998 1.0000  
## Pos Pred Value 0.2255 0.0000 NaN NaN 0.0000 NaN  
## Neg Pred Value 0.9965 0.9641 0.9604 0.963 0.9656 0.9614  
## Prevalence 0.0456 0.0358 0.0396 0.037 0.0344 0.0386  
## Detection Rate 0.0428 0.0000 0.0000 0.000 0.0000 0.0000  
## Detection Prevalence 0.1898 0.0014 0.0000 0.000 0.0002 0.0000  
## Balanced Accuracy 0.8923 0.4993 0.5000 0.500 0.4999 0.5000  
## Class: S Class: T Class: U Class: V Class: W Class: X  
## Sensitivity 0.0000 0.8191 0.0000 0.06186 0.8122 0.0000  
## Specificity 1.0000 0.8807 1.0000 0.99875 0.9046 1.0000  
## Pos Pred Value NaN 0.2115 NaN 0.66667 0.2589 NaN  
## Neg Pred Value 0.9642 0.9920 0.9576 0.96347 0.9916 0.9598  
## Prevalence 0.0358 0.0376 0.0424 0.03880 0.0394 0.0402  
## Detection Rate 0.0000 0.0308 0.0000 0.00240 0.0320 0.0000  
## Detection Prevalence 0.0000 0.1456 0.0000 0.00360 0.1236 0.0000  
## Balanced Accuracy 0.5000 0.8499 0.5000 0.53030 0.8584 0.5000  
## Class: Y Class: Z  
## Sensitivity 0.2690 0.8010  
## Specificity 0.9484 0.8085  
## Pos Pred Value 0.1559 0.1458  
## Neg Pred Value 0.9734 0.9901  
## Prevalence 0.0342 0.0392  
## Detection Rate 0.0092 0.0314  
## Detection Prevalence 0.0590 0.2154  
## Balanced Accuracy 0.6087 0.8048

Non - Linear models KNN

knnfit<- train(x = trainX,y = trainY,method = "knn",metric = "Kappa",preProc = c("center", "scale"),tuneGrid = data.frame(.k = c(3,5,7,9,11)))  
library(class)  
myknn<-knn(trainX,testX,as.factor(trainY), k = 3, l = 0, prob = FALSE, use.all = TRUE)  
confusionMatrix(myknn,testY)

## Confusion Matrix and Statistics  
##   
## Reference  
## Prediction A B C D E F G H I J K L M N O P  
## A 196 0 0 0 0 0 0 0 0 1 0 0 0 1 0 0  
## B 0 187 0 0 0 0 2 4 0 0 2 0 2 0 0 1  
## C 1 0 186 0 2 0 0 1 0 0 0 0 0 0 0 0  
## D 1 0 0 187 0 1 1 8 0 0 0 0 1 2 1 1  
## E 0 0 0 0 196 0 3 1 0 0 0 1 0 0 0 0  
## F 0 0 0 1 0 175 0 0 1 0 0 0 0 0 0 8  
## G 0 0 3 0 5 1 189 1 0 0 0 1 3 0 0 0  
## H 0 2 1 3 0 0 2 159 0 0 3 0 0 3 0 1  
## I 0 0 0 0 0 1 0 0 190 12 0 0 0 0 0 1  
## J 0 0 0 0 0 0 0 0 3 171 0 1 0 0 0 0  
## K 0 0 1 0 1 0 0 3 0 0 157 0 0 1 0 0  
## L 0 0 0 0 1 0 0 0 0 0 0 190 0 1 0 0  
## M 0 0 0 0 0 0 0 1 0 0 0 0 221 0 0 0  
## N 0 0 0 0 0 0 0 1 0 0 0 0 0 167 0 0  
## O 0 0 1 0 0 0 0 0 0 0 0 1 0 0 193 0  
## P 0 0 0 0 0 7 0 0 0 0 0 0 0 0 0 170  
## Q 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 0  
## R 0 2 0 0 0 0 1 5 0 0 4 1 0 3 0 1  
## S 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0  
## T 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0  
## U 0 0 0 0 0 0 1 0 0 0 1 0 1 0 0 1  
## V 0 6 1 0 0 1 1 1 0 0 0 0 0 1 0 0  
## W 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1  
## X 0 0 0 0 0 0 0 0 0 1 4 0 0 0 0 0  
## Y 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0  
## Z 0 0 0 0 3 0 0 0 0 0 0 0 0 0 0 0  
## Reference  
## Prediction Q R S T U V W X Y Z  
## A 0 0 0 0 1 0 0 0 0 0  
## B 0 4 0 2 0 4 0 0 0 0  
## C 0 0 0 0 0 0 0 0 0 0  
## D 0 0 0 0 0 0 0 2 0 0  
## E 0 0 0 0 0 0 0 2 0 3  
## F 0 0 3 1 0 0 0 0 1 0  
## G 0 0 0 0 0 0 1 0 0 0  
## H 0 2 1 1 1 0 0 0 0 0  
## I 0 0 0 0 0 0 0 0 0 1  
## J 0 0 1 0 0 0 0 0 0 0  
## K 0 1 0 0 0 0 0 1 0 0  
## L 0 0 0 0 0 0 0 0 0 0  
## M 0 0 0 0 0 0 0 0 0 0  
## N 0 3 0 0 0 0 1 0 0 0  
## O 7 0 0 0 0 0 1 1 0 0  
## P 1 0 0 0 0 0 0 0 0 0  
## Q 163 0 0 0 0 0 0 0 0 4  
## R 1 183 2 0 0 0 0 1 0 0  
## S 0 0 172 1 0 0 0 0 0 0  
## T 0 0 0 182 0 0 0 0 0 0  
## U 0 0 0 0 209 0 0 0 0 0  
## V 0 0 0 0 1 188 0 0 2 0  
## W 0 0 0 0 0 1 193 0 0 0  
## X 0 0 0 0 0 0 0 193 1 0  
## Y 0 0 0 1 0 1 1 1 167 0  
## Z 0 0 0 0 0 0 0 0 0 188  
##   
## Overall Statistics  
##   
## Accuracy : 0.9544   
## 95% CI : (0.9482, 0.96)  
## No Information Rate : 0.0456   
## P-Value [Acc > NIR] : < 2.2e-16   
##   
## Kappa : 0.9526   
## Mcnemar's Test P-Value : NA   
##   
## Statistics by Class:  
##   
## Class: A Class: B Class: C Class: D Class: E Class: F  
## Sensitivity 0.9899 0.9492 0.9637 0.9791 0.9423 0.9309  
## Specificity 0.9994 0.9956 0.9992 0.9963 0.9979 0.9969  
## Pos Pred Value 0.9849 0.8990 0.9789 0.9122 0.9515 0.9211  
## Neg Pred Value 0.9996 0.9979 0.9985 0.9992 0.9975 0.9973  
## Prevalence 0.0396 0.0394 0.0386 0.0382 0.0416 0.0376  
## Detection Rate 0.0392 0.0374 0.0372 0.0374 0.0392 0.0350  
## Detection Prevalence 0.0398 0.0416 0.0380 0.0410 0.0412 0.0380  
## Balanced Accuracy 0.9946 0.9724 0.9814 0.9877 0.9701 0.9639  
## Class: G Class: H Class: I Class: J Class: K Class: L  
## Sensitivity 0.9403 0.8548 0.9794 0.9243 0.9181 0.9744  
## Specificity 0.9969 0.9958 0.9969 0.9990 0.9983 0.9996  
## Pos Pred Value 0.9265 0.8883 0.9268 0.9716 0.9515 0.9896  
## Neg Pred Value 0.9975 0.9944 0.9992 0.9971 0.9971 0.9990  
## Prevalence 0.0402 0.0372 0.0388 0.0370 0.0342 0.0390  
## Detection Rate 0.0378 0.0318 0.0380 0.0342 0.0314 0.0380  
## Detection Prevalence 0.0408 0.0358 0.0410 0.0352 0.0330 0.0384  
## Balanced Accuracy 0.9686 0.9253 0.9881 0.9616 0.9582 0.9870  
## Class: M Class: N Class: O Class: P Class: Q Class: R  
## Sensitivity 0.9693 0.9330 0.9747 0.9189 0.9477 0.9482  
## Specificity 0.9998 0.9990 0.9977 0.9983 0.9986 0.9956  
## Pos Pred Value 0.9955 0.9709 0.9461 0.9551 0.9588 0.8971  
## Neg Pred Value 0.9985 0.9975 0.9990 0.9969 0.9981 0.9979  
## Prevalence 0.0456 0.0358 0.0396 0.0370 0.0344 0.0386  
## Detection Rate 0.0442 0.0334 0.0386 0.0340 0.0326 0.0366  
## Detection Prevalence 0.0444 0.0344 0.0408 0.0356 0.0340 0.0408  
## Balanced Accuracy 0.9845 0.9660 0.9862 0.9586 0.9731 0.9719  
## Class: S Class: T Class: U Class: V Class: W Class: X  
## Sensitivity 0.9609 0.9681 0.9858 0.9691 0.9797 0.9602  
## Specificity 0.9994 0.9998 0.9992 0.9971 0.9994 0.9987  
## Pos Pred Value 0.9829 0.9945 0.9812 0.9307 0.9847 0.9698  
## Neg Pred Value 0.9985 0.9988 0.9994 0.9987 0.9992 0.9983  
## Prevalence 0.0358 0.0376 0.0424 0.0388 0.0394 0.0402  
## Detection Rate 0.0344 0.0364 0.0418 0.0376 0.0386 0.0386  
## Detection Prevalence 0.0350 0.0366 0.0426 0.0404 0.0392 0.0398  
## Balanced Accuracy 0.9801 0.9839 0.9925 0.9831 0.9895 0.9795  
## Class: Y Class: Z  
## Sensitivity 0.9766 0.9592  
## Specificity 0.9990 0.9994  
## Pos Pred Value 0.9709 0.9843  
## Neg Pred Value 0.9992 0.9983  
## Prevalence 0.0342 0.0392  
## Detection Rate 0.0334 0.0376  
## Detection Prevalence 0.0344 0.0382  
## Balanced Accuracy 0.9878 0.9793

Improved KNN. For the problem of nearest neighbor classification, a simpler approach called "leave-out-one" cross-validation can be used, and this is provided by the knn.cv function. Using this technique, the observation itself is ignored when looking for its neighbors.

myknn<-knn.cv(x, y, k = 3, l = 0, prob = FALSE, use.all = TRUE)  
confusionMatrix(myknn, y)

## Confusion Matrix and Statistics  
##   
## Reference  
## Prediction A B C D E F G H I J K L M N O P  
## A 784 0 0 0 0 0 0 1 0 2 0 0 1 1 0 0  
## B 0 728 0 5 1 4 5 15 0 0 1 0 5 0 1 3  
## C 1 0 712 0 5 0 3 1 0 0 0 0 0 0 2 0  
## D 0 1 0 775 0 0 6 20 0 0 0 0 0 4 8 2  
## E 0 3 4 0 731 1 9 1 0 0 6 5 0 0 0 0  
## F 0 0 0 0 2 730 0 1 0 1 0 0 0 0 0 24  
## G 0 1 7 0 7 0 738 5 0 0 1 4 2 0 0 0  
## H 0 2 2 12 0 1 1 651 0 1 18 1 1 6 0 4  
## I 0 0 0 0 0 1 0 0 721 24 0 0 0 0 0 1  
## J 0 0 0 0 0 2 0 0 29 712 0 1 0 0 0 0  
## K 0 0 0 0 3 0 0 15 0 0 685 1 0 0 0 0  
## L 1 0 1 0 3 0 0 0 0 0 0 745 0 1 0 1  
## M 0 0 0 0 0 0 0 1 0 0 0 0 770 1 0 0  
## N 0 0 0 0 0 2 0 2 1 1 0 0 1 751 1 0  
## O 0 0 3 7 0 0 4 2 0 0 0 0 1 5 728 0  
## P 0 0 0 1 1 18 0 0 0 0 0 0 0 1 0 757  
## Q 0 0 1 0 2 0 0 0 0 0 0 1 0 0 9 2  
## R 0 11 0 2 0 0 1 15 0 0 13 1 0 10 1 2  
## S 0 4 0 1 1 3 0 0 1 0 0 1 0 0 0 0  
## T 1 0 2 0 0 10 0 0 0 0 0 0 0 0 0 0  
## U 0 1 2 0 0 0 0 1 0 2 2 0 0 0 1 1  
## V 0 15 2 0 0 2 3 2 0 0 0 0 6 3 0 3  
## W 0 0 0 0 1 0 2 1 0 0 1 0 5 0 2 1  
## X 0 0 0 0 4 0 1 0 1 2 12 1 0 0 0 0  
## Y 1 0 0 0 0 1 0 0 1 0 0 0 0 0 0 2  
## Z 1 0 0 2 7 0 0 0 1 2 0 0 0 0 0 0  
## Reference  
## Prediction Q R S T U V W X Y Z  
## A 0 0 1 0 1 2 0 1 1 0  
## B 0 10 1 5 1 12 0 1 1 0  
## C 0 0 0 1 1 0 0 0 0 0  
## D 0 2 0 1 1 0 0 2 0 0  
## E 0 0 2 0 0 0 0 9 0 4  
## F 0 0 1 2 0 2 0 0 0 0  
## G 4 1 0 0 0 2 0 0 0 0  
## H 0 8 1 0 3 1 0 1 0 0  
## I 0 0 0 0 0 0 0 0 0 0  
## J 0 0 0 1 1 0 0 0 0 1  
## K 0 6 1 0 0 0 1 5 0 0  
## L 1 1 0 0 0 0 0 0 0 1  
## M 0 0 0 0 4 1 2 0 1 0  
## N 0 5 0 0 0 1 1 0 0 0  
## O 19 0 0 0 0 0 3 2 0 0  
## P 0 0 0 0 0 3 0 0 0 0  
## Q 756 1 0 0 0 0 0 0 2 5  
## R 1 724 3 0 0 0 1 2 0 1  
## S 1 0 738 2 0 0 0 0 0 2  
## T 0 0 0 772 0 0 0 0 5 0  
## U 0 0 0 0 799 1 0 0 2 0  
## V 1 0 0 0 1 733 0 0 10 0  
## W 0 0 0 0 0 2 744 0 1 0  
## X 0 0 0 1 0 0 0 764 1 2  
## Y 0 0 0 10 1 4 0 0 762 0  
## Z 0 0 0 1 0 0 0 0 0 718  
##   
## Overall Statistics  
##   
## Accuracy : 0.9614   
## 95% CI : (0.9586, 0.964)  
## No Information Rate : 0.0406   
## P-Value [Acc > NIR] : < 2.2e-16   
##   
## Kappa : 0.9599   
## Mcnemar's Test P-Value : NA   
##   
## Statistics by Class:  
##   
## Class: A Class: B Class: C Class: D Class: E Class: F  
## Sensitivity 0.99366 0.95039 0.9674 0.96273 0.95182 0.94194  
## Specificity 0.99943 0.99631 0.9993 0.99755 0.99771 0.99828  
## Pos Pred Value 0.98616 0.91114 0.9807 0.94282 0.94323 0.95675  
## Neg Pred Value 0.99974 0.99802 0.9988 0.99844 0.99808 0.99766  
## Prevalence 0.03945 0.03830 0.0368 0.04025 0.03840 0.03875  
## Detection Rate 0.03920 0.03640 0.0356 0.03875 0.03655 0.03650  
## Detection Prevalence 0.03975 0.03995 0.0363 0.04110 0.03875 0.03815  
## Balanced Accuracy 0.99655 0.97335 0.9833 0.98014 0.97477 0.97011  
## Class: G Class: H Class: I Class: J Class: K Class: L  
## Sensitivity 0.95472 0.88692 0.95497 0.95315 0.92693 0.97898  
## Specificity 0.99823 0.99673 0.99865 0.99818 0.99834 0.99948  
## Pos Pred Value 0.95596 0.91176 0.96519 0.95315 0.95537 0.98675  
## Neg Pred Value 0.99818 0.99570 0.99823 0.99818 0.99720 0.99917  
## Prevalence 0.03865 0.03670 0.03775 0.03735 0.03695 0.03805  
## Detection Rate 0.03690 0.03255 0.03605 0.03560 0.03425 0.03725  
## Detection Prevalence 0.03860 0.03570 0.03735 0.03735 0.03585 0.03775  
## Balanced Accuracy 0.97648 0.94183 0.97681 0.97566 0.96263 0.98923  
## Class: M Class: N Class: O Class: P Class: Q Class: R  
## Sensitivity 0.9722 0.95913 0.96680 0.94271 0.96552 0.9551  
## Specificity 0.9995 0.99922 0.99761 0.99875 0.99880 0.9967  
## Pos Pred Value 0.9872 0.98042 0.94057 0.96927 0.97047 0.9188  
## Neg Pred Value 0.9989 0.99834 0.99870 0.99761 0.99860 0.9982  
## Prevalence 0.0396 0.03915 0.03765 0.04015 0.03915 0.0379  
## Detection Rate 0.0385 0.03755 0.03640 0.03785 0.03780 0.0362  
## Detection Prevalence 0.0390 0.03830 0.03870 0.03905 0.03895 0.0394  
## Balanced Accuracy 0.9859 0.97918 0.98220 0.97073 0.98216 0.9759  
## Class: S Class: T Class: U Class: V Class: W Class: X  
## Sensitivity 0.9866 0.9698 0.98278 0.95942 0.9894 0.97078  
## Specificity 0.9992 0.9991 0.99932 0.99750 0.9992 0.99870  
## Pos Pred Value 0.9788 0.9772 0.98399 0.93854 0.9789 0.96831  
## Neg Pred Value 0.9995 0.9988 0.99927 0.99839 0.9996 0.99880  
## Prevalence 0.0374 0.0398 0.04065 0.03820 0.0376 0.03935  
## Detection Rate 0.0369 0.0386 0.03995 0.03665 0.0372 0.03820  
## Detection Prevalence 0.0377 0.0395 0.04060 0.03905 0.0380 0.03945  
## Balanced Accuracy 0.9929 0.9845 0.99105 0.97846 0.9943 0.98474  
## Class: Y Class: Z  
## Sensitivity 0.9695 0.9782  
## Specificity 0.9990 0.9993  
## Pos Pred Value 0.9744 0.9809  
## Neg Pred Value 0.9988 0.9992  
## Prevalence 0.0393 0.0367  
## Detection Rate 0.0381 0.0359  
## Detection Prevalence 0.0391 0.0366  
## Balanced Accuracy 0.9842 0.9887

SVM

library(e1071)  
library(kernlab)  
library(klaR)  
sigmaRange <- sigest(as.matrix(trainX))  
svmRGrid <- expand.grid(.sigma = sigmaRange[1],.C = 2^(seq(-2, 2)))  
  
svmRModel <- train(trainX, trainY,method = "svmRadial",metric = "Kappa",tuneGrid = svmRGrid,fit = FALSE,preProc = c("center", "scale"))  
svmRModel

## Support Vector Machines with Radial Basis Function Kernel   
##   
## 15000 samples  
## 13 predictor  
## 26 classes: 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'   
##   
## Pre-processing: centered, scaled   
## Resampling: Bootstrapped (25 reps)   
##   
## Summary of sample sizes: 15000, 15000, 15000, 15000, 15000, 15000, ...   
##   
## Resampling results across tuning parameters:  
##   
## C Accuracy Kappa Accuracy SD Kappa SD   
## 0.25 0.8116716 0.8041039 0.005517341 0.005736462  
## 0.50 0.8429431 0.8366312 0.004796872 0.004988122  
## 1.00 0.8686856 0.8634081 0.004181792 0.004350780  
## 2.00 0.8903813 0.8859756 0.003851433 0.004006828  
## 4.00 0.9079643 0.9042654 0.003491611 0.003631531  
##   
## Tuning parameter 'sigma' was held constant at a value of 0.02235342  
## Kappa was used to select the optimal model using the largest value.  
## The final values used for the model were sigma = 0.02235342 and C = 4.

svmPred<-predict(svmRModel,testX)  
confusionMatrix(svmPred,testY)

## Confusion Matrix and Statistics  
##   
## Reference  
## Prediction A B C D E F G H I J K L M N O P  
## A 191 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0  
## B 0 180 0 3 4 3 0 5 0 0 1 0 4 1 0 2  
## C 1 0 175 0 1 0 1 0 1 0 1 2 0 0 0 0  
## D 2 2 0 179 0 0 5 12 3 4 3 0 0 6 6 1  
## E 0 2 8 0 177 2 1 0 2 2 1 8 0 0 0 2  
## F 0 0 1 0 1 174 0 1 2 0 0 0 0 0 0 12  
## G 1 1 4 0 9 0 179 4 0 0 0 3 1 0 2 4  
## H 0 3 1 4 1 2 1 132 0 1 2 1 2 2 1 0  
## I 0 0 0 0 0 0 0 0 179 7 0 0 0 0 0 0  
## J 0 0 0 0 0 0 0 1 1 168 0 0 0 0 0 0  
## K 1 0 1 0 4 0 2 3 0 0 148 2 0 0 0 0  
## L 0 0 0 0 0 0 1 0 1 0 0 175 0 0 0 0  
## M 0 0 0 0 0 0 1 0 0 0 0 0 215 2 0 0  
## N 0 0 0 0 0 1 0 1 0 0 0 0 0 160 0 0  
## O 0 0 2 1 0 1 2 4 0 0 0 0 2 2 180 0  
## P 0 0 0 0 0 3 0 1 0 0 0 0 0 0 1 160  
## Q 0 1 1 0 1 0 1 0 0 0 0 0 0 0 3 0  
## R 0 5 0 3 1 0 1 16 0 0 12 0 1 2 3 0  
## S 0 1 0 0 3 1 0 0 3 1 0 2 0 0 0 0  
## T 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0  
## U 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 1  
## V 0 1 0 0 0 0 2 1 0 0 0 0 0 1 0 1  
## W 0 0 0 0 0 0 1 0 0 0 0 0 3 1 2 0  
## X 0 1 0 0 1 0 1 0 2 0 3 2 0 0 0 0  
## Y 1 0 0 0 0 0 0 5 0 0 0 0 0 1 0 2  
## Z 0 0 0 0 5 0 0 0 0 2 0 0 0 0 0 0  
## Reference  
## Prediction Q R S T U V W X Y Z  
## A 0 0 1 0 0 1 0 0 0 2  
## B 1 6 3 2 0 4 1 0 0 0  
## C 0 1 0 0 0 0 0 0 0 0  
## D 0 0 0 0 0 0 0 4 1 1  
## E 0 0 2 0 0 0 0 1 0 3  
## F 0 0 5 0 0 0 0 1 0 0  
## G 2 1 0 0 0 0 1 0 0 0  
## H 0 4 0 5 0 0 1 1 1 0  
## I 0 0 0 0 0 0 0 0 0 4  
## J 0 0 0 0 0 0 0 1 0 1  
## K 0 5 0 4 0 0 0 2 0 0  
## L 0 0 0 0 0 0 0 1 0 0  
## M 0 0 0 0 0 0 0 0 0 0  
## N 0 2 0 0 0 0 1 0 0 0  
## O 11 0 0 0 1 0 1 1 0 0  
## P 0 0 0 0 0 0 0 0 0 0  
## Q 156 0 0 0 0 0 0 1 0 3  
## R 0 174 3 2 0 1 0 1 0 0  
## S 0 0 163 0 0 0 0 0 0 5  
## T 0 0 1 172 0 1 0 1 1 1  
## U 0 0 0 0 208 0 1 0 0 0  
## V 0 0 0 0 2 186 0 0 1 0  
## W 0 0 0 0 1 0 191 0 1 0  
## X 0 0 1 2 0 0 0 183 1 1  
## Y 1 0 0 0 0 1 0 2 165 0  
## Z 1 0 0 1 0 0 0 1 0 175  
##   
## Overall Statistics  
##   
## Accuracy : 0.909   
## 95% CI : (0.9007, 0.9168)  
## No Information Rate : 0.0456   
## P-Value [Acc > NIR] : < 2.2e-16   
##   
## Kappa : 0.9053   
## Mcnemar's Test P-Value : NA   
##   
## Statistics by Class:  
##   
## Class: A Class: B Class: C Class: D Class: E Class: F  
## Sensitivity 0.9646 0.9137 0.9067 0.9372 0.8510 0.9255  
## Specificity 0.9988 0.9917 0.9983 0.9896 0.9929 0.9952  
## Pos Pred Value 0.9695 0.8182 0.9563 0.7817 0.8389 0.8832  
## Neg Pred Value 0.9985 0.9964 0.9963 0.9975 0.9935 0.9971  
## Prevalence 0.0396 0.0394 0.0386 0.0382 0.0416 0.0376  
## Detection Rate 0.0382 0.0360 0.0350 0.0358 0.0354 0.0348  
## Detection Prevalence 0.0394 0.0440 0.0366 0.0458 0.0422 0.0394  
## Balanced Accuracy 0.9817 0.9527 0.9525 0.9634 0.9219 0.9604  
## Class: G Class: H Class: I Class: J Class: K Class: L  
## Sensitivity 0.8905 0.7097 0.9227 0.9081 0.8655 0.8974  
## Specificity 0.9931 0.9931 0.9977 0.9992 0.9950 0.9994  
## Pos Pred Value 0.8443 0.8000 0.9421 0.9767 0.8605 0.9831  
## Neg Pred Value 0.9954 0.9888 0.9969 0.9965 0.9952 0.9959  
## Prevalence 0.0402 0.0372 0.0388 0.0370 0.0342 0.0390  
## Detection Rate 0.0358 0.0264 0.0358 0.0336 0.0296 0.0350  
## Detection Prevalence 0.0424 0.0330 0.0380 0.0344 0.0344 0.0356  
## Balanced Accuracy 0.9418 0.8514 0.9602 0.9536 0.9303 0.9484  
## Class: M Class: N Class: O Class: P Class: Q Class: R  
## Sensitivity 0.9430 0.8939 0.9091 0.8649 0.9070 0.9016  
## Specificity 0.9994 0.9990 0.9942 0.9990 0.9977 0.9894  
## Pos Pred Value 0.9862 0.9697 0.8654 0.9697 0.9341 0.7733  
## Neg Pred Value 0.9973 0.9961 0.9962 0.9948 0.9967 0.9960  
## Prevalence 0.0456 0.0358 0.0396 0.0370 0.0344 0.0386  
## Detection Rate 0.0430 0.0320 0.0360 0.0320 0.0312 0.0348  
## Detection Prevalence 0.0436 0.0330 0.0416 0.0330 0.0334 0.0450  
## Balanced Accuracy 0.9712 0.9464 0.9516 0.9319 0.9523 0.9455  
## Class: S Class: T Class: U Class: V Class: W Class: X  
## Sensitivity 0.9106 0.9149 0.9811 0.9588 0.9695 0.9104  
## Specificity 0.9967 0.9988 0.9990 0.9981 0.9981 0.9969  
## Pos Pred Value 0.9106 0.9663 0.9765 0.9538 0.9550 0.9242  
## Neg Pred Value 0.9967 0.9967 0.9992 0.9983 0.9988 0.9963  
## Prevalence 0.0358 0.0376 0.0424 0.0388 0.0394 0.0402  
## Detection Rate 0.0326 0.0344 0.0416 0.0372 0.0382 0.0366  
## Detection Prevalence 0.0358 0.0356 0.0426 0.0390 0.0400 0.0396  
## Balanced Accuracy 0.9536 0.9568 0.9900 0.9784 0.9838 0.9537  
## Class: Y Class: Z  
## Sensitivity 0.9649 0.8929  
## Specificity 0.9973 0.9979  
## Pos Pred Value 0.9270 0.9459  
## Neg Pred Value 0.9988 0.9956  
## Prevalence 0.0342 0.0392  
## Detection Rate 0.0330 0.0350  
## Detection Prevalence 0.0356 0.0370  
## Balanced Accuracy 0.9811 0.9454

Nnet

nnetGrid <-expand.grid(.size=1:10,.decay=c(0,0.1,1,2))  
maxSize <- max(nnetGrid$.size)  
numWts <- 1\*(maxSize \* (length(trainX) + 1) + maxSize + 1)  
set.seed(476)  
nnetModel <- train(x=trainX,y=trainY,method="nnet",metric="Kappa",tuneGrid=nnetGrid,preProc=c("center", "scale"),trace=FALSE,maxit=200,MaxNWts=numWts)

## Loading required package: nnet

## Warning: model fit failed for Resample01: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample01: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample01: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample01: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample01: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample01: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample01: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample01: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample01: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample01: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample01: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample01: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample01: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample01: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample01: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample01: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample01: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample01: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample01: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample01: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample01: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample01: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample01: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample01: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample01: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample01: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample01: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample01: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample02: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample02: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample02: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample02: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample02: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample02: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample02: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample02: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample02: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample02: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample02: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample02: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample02: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample02: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample02: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample02: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample02: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample02: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample02: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample02: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample02: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample02: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample02: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample02: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample02: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample02: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample02: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample02: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample03: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample03: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample03: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample03: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample03: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample03: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample03: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample03: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample03: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample03: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample03: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample03: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample03: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample03: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample03: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample03: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample03: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample03: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample03: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample03: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample03: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample03: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample03: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample03: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample03: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample03: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample03: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample03: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample04: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample04: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample04: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample04: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample04: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample04: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample04: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample04: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample04: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample04: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample04: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample04: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample04: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample04: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample04: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample04: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample04: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample04: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample04: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample04: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample04: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample04: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample04: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample04: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample04: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample04: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample04: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample04: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample05: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample05: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample05: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample05: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample05: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample05: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample05: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample05: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample05: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample05: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample05: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample05: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample05: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample05: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample05: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample05: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample05: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample05: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample05: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample05: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample05: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample05: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample05: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample05: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample05: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample05: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample05: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample05: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample06: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample06: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample06: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample06: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample06: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample06: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample06: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample06: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample06: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample06: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample06: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample06: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample06: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample06: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample06: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample06: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample06: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample06: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample06: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample06: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample06: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample06: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample06: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample06: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample06: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample06: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample06: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample06: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample07: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample07: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample07: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample07: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample07: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample07: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample07: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample07: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample07: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample07: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample07: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample07: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample07: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample07: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample07: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample07: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample07: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample07: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample07: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample07: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample07: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample07: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample07: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample07: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample07: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample07: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample07: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample07: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample08: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample08: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample08: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample08: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample08: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample08: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample08: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample08: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample08: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample08: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample08: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample08: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample08: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample08: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample08: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample08: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample08: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample08: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample08: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample08: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample08: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample08: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample08: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample08: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample08: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample08: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample08: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample08: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample09: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample09: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample09: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample09: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample09: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample09: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample09: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample09: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample09: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample09: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample09: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample09: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample09: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample09: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample09: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample09: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample09: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample09: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample09: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample09: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample09: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample09: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample09: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample09: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample09: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample09: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample09: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample09: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample10: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample10: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample10: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample10: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample10: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample10: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample10: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample10: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample10: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample10: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample10: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample10: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample10: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample10: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample10: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample10: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample10: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample10: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample10: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample10: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample10: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample10: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample10: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample10: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample10: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample10: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample10: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample10: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample11: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample11: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample11: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample11: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample11: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample11: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample11: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample11: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample11: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample11: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample11: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample11: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample11: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample11: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample11: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample11: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample11: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample11: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample11: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample11: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample11: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample11: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample11: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample11: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample11: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample11: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample11: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample11: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample12: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample12: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample12: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample12: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample12: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample12: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample12: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample12: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample12: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample12: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample12: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample12: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample12: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample12: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample12: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample12: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample12: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample12: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample12: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample12: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample12: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample12: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample12: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample12: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample12: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample12: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample12: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample12: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample13: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample13: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample13: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample13: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample13: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample13: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample13: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample13: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample13: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample13: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample13: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample13: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample13: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample13: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample13: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample13: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample13: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample13: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample13: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample13: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample13: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample13: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample13: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample13: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample13: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample13: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample13: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample13: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample14: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample14: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample14: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample14: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample14: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample14: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample14: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample14: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample14: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample14: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample14: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample14: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample14: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample14: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample14: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample14: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample14: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample14: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample14: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample14: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample14: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample14: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample14: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample14: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample14: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample14: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample14: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample14: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample15: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample15: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample15: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample15: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample15: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample15: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample15: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample15: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample15: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample15: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample15: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample15: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample15: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample15: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample15: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample15: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample15: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample15: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample15: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample15: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample15: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample15: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample15: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample15: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample15: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample15: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample15: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample15: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample16: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample16: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample16: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample16: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample16: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample16: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample16: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample16: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample16: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample16: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample16: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample16: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample16: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample16: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample16: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample16: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample16: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample16: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample16: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample16: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample16: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample16: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample16: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample16: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample16: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample16: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample16: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample16: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample17: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample17: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample17: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample17: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample17: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample17: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample17: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample17: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample17: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample17: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample17: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample17: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample17: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample17: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample17: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample17: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample17: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample17: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample17: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample17: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample17: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample17: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample17: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample17: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample17: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample17: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample17: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample17: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample18: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample18: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample18: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample18: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample18: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample18: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample18: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample18: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample18: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample18: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample18: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample18: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample18: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample18: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample18: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample18: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample18: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample18: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample18: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample18: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample18: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample18: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample18: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample18: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample18: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample18: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample18: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample18: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample19: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample19: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample19: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample19: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample19: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample19: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample19: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample19: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample19: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample19: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample19: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample19: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample19: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample19: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample19: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample19: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample19: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample19: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample19: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample19: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample19: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample19: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample19: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample19: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample19: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample19: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample19: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample19: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample20: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample20: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample20: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample20: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample20: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample20: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample20: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample20: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample20: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample20: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample20: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample20: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample20: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample20: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample20: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample20: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample20: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample20: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample20: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample20: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample20: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample20: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample20: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample20: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample20: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample20: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample20: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample20: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample21: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample21: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample21: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample21: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample21: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample21: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample21: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample21: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample21: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample21: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample21: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample21: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample21: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample21: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample21: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample21: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample21: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample21: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample21: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample21: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample21: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample21: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample21: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample21: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample21: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample21: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample21: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample21: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample22: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample22: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample22: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample22: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample22: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample22: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample22: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample22: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample22: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample22: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample22: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample22: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample22: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample22: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample22: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample22: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample22: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample22: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample22: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample22: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample22: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample22: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample22: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample22: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample22: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample22: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample22: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample22: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample23: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample23: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample23: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample23: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample23: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample23: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample23: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample23: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample23: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample23: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample23: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample23: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample23: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample23: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample23: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample23: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample23: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample23: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample23: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample23: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample23: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample23: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample23: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample23: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample23: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample23: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample23: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample23: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample24: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample24: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample24: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample24: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample24: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample24: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample24: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample24: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample24: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample24: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample24: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample24: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample24: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample24: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample24: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample24: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample24: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample24: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample24: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample24: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample24: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample24: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample24: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample24: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample24: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample24: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample24: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample24: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample25: size= 4, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample25: size= 5, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample25: size= 6, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample25: size= 7, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample25: size= 8, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample25: size= 9, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample25: size=10, decay=0.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample25: size= 4, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample25: size= 5, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample25: size= 6, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample25: size= 7, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample25: size= 8, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample25: size= 9, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample25: size=10, decay=0.1 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample25: size= 4, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample25: size= 5, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample25: size= 6, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample25: size= 7, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample25: size= 8, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample25: size= 9, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample25: size=10, decay=1.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning: model fit failed for Resample25: size= 4, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (186) weights

## Warning: model fit failed for Resample25: size= 5, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (226) weights

## Warning: model fit failed for Resample25: size= 6, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (266) weights

## Warning: model fit failed for Resample25: size= 7, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (306) weights

## Warning: model fit failed for Resample25: size= 8, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (346) weights

## Warning: model fit failed for Resample25: size= 9, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (386) weights

## Warning: model fit failed for Resample25: size=10, decay=2.0 Error in nnet.default(x, y, w, softmax = TRUE, ...) :   
## too many (426) weights

## Warning in nominalTrainWorkflow(x = x, y = y, wts = weights, info =  
## trainInfo, : There were missing values in resampled performance measures.

## Warning in train.default(x = trainX, y = trainY, method = "nnet", metric =  
## "Kappa", : missing values found in aggregated results

nnetModel

## Neural Network   
##   
## 15000 samples  
## 13 predictor  
## 26 classes: 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H', 'I', 'J', 'K', 'L', 'M', 'N', 'O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z'   
##   
## Pre-processing: centered, scaled   
## Resampling: Bootstrapped (25 reps)   
##   
## Summary of sample sizes: 15000, 15000, 15000, 15000, 15000, 15000, ...   
##   
## Resampling results across tuning parameters:  
##   
## size decay Accuracy Kappa Accuracy SD Kappa SD   
## 1 0.0 0.1721552 0.13925465 0.012104369 0.012588550  
## 1 0.1 0.1645228 0.13141653 0.008313172 0.008761456  
## 1 1.0 0.1366458 0.10276125 0.006194946 0.006369236  
## 1 2.0 0.1243592 0.09018002 0.008899931 0.008694901  
## 2 0.0 0.3392758 0.31291087 0.039539183 0.041060387  
## 2 0.1 0.3389576 0.31261560 0.011208979 0.011558657  
## 2 1.0 0.2963639 0.26850521 0.011969575 0.012334720  
## 2 2.0 0.2724686 0.24372387 0.014093756 0.014460833  
## 3 0.0 0.5012276 0.48124893 0.022398048 0.023284106  
## 3 0.1 0.4965047 0.47636823 0.008824991 0.009161699  
## 3 1.0 0.4581531 0.43656710 0.008548176 0.008836588  
## 3 2.0 0.4261495 0.40337037 0.011090971 0.011372202  
## 4 0.0 NaN NaN NA NA  
## 4 0.1 NaN NaN NA NA  
## 4 1.0 NaN NaN NA NA  
## 4 2.0 NaN NaN NA NA  
## 5 0.0 NaN NaN NA NA  
## 5 0.1 NaN NaN NA NA  
## 5 1.0 NaN NaN NA NA  
## 5 2.0 NaN NaN NA NA  
## 6 0.0 NaN NaN NA NA  
## 6 0.1 NaN NaN NA NA  
## 6 1.0 NaN NaN NA NA  
## 6 2.0 NaN NaN NA NA  
## 7 0.0 NaN NaN NA NA  
## 7 0.1 NaN NaN NA NA  
## 7 1.0 NaN NaN NA NA  
## 7 2.0 NaN NaN NA NA  
## 8 0.0 NaN NaN NA NA  
## 8 0.1 NaN NaN NA NA  
## 8 1.0 NaN NaN NA NA  
## 8 2.0 NaN NaN NA NA  
## 9 0.0 NaN NaN NA NA  
## 9 0.1 NaN NaN NA NA  
## 9 1.0 NaN NaN NA NA  
## 9 2.0 NaN NaN NA NA  
## 10 0.0 NaN NaN NA NA  
## 10 0.1 NaN NaN NA NA  
## 10 1.0 NaN NaN NA NA  
## 10 2.0 NaN NaN NA NA  
##   
## Kappa was used to select the optimal model using the largest value.  
## The final values used for the model were size = 3 and decay = 0.

confusionMatrix(predict(nnetModel,testX),testY)

## Confusion Matrix and Statistics  
##   
## Reference  
## Prediction A B C D E F G H I J K L M N O P  
## A 159 0 0 3 0 0 1 1 4 64 2 7 0 0 4 0  
## B 2 80 3 11 5 10 2 0 60 4 1 2 0 0 1 1  
## C 0 0 138 0 4 1 20 0 0 0 37 9 0 0 1 0  
## D 3 18 1 73 0 5 2 29 1 5 4 0 0 3 5 7  
## E 0 5 13 0 82 0 16 0 4 0 3 11 0 0 0 0  
## F 1 2 0 8 0 68 0 7 2 0 0 0 0 1 0 20  
## G 0 0 5 0 22 3 65 0 0 0 7 6 0 0 0 0  
## H 3 5 0 26 0 1 1 8 0 0 3 0 2 4 17 2  
## I 0 18 0 0 2 3 2 1 43 9 0 0 0 0 0 1  
## J 12 3 0 7 0 1 4 0 5 61 0 11 0 0 1 0  
## K 0 6 15 1 6 1 33 11 0 0 39 1 0 3 24 3  
## L 1 10 0 0 8 0 3 0 2 3 1 139 0 0 0 0  
## M 1 0 0 2 0 0 4 1 0 0 0 0 160 61 5 0  
## N 0 4 0 12 0 1 1 58 0 0 1 0 15 66 10 8  
## O 4 5 3 14 2 0 6 28 0 1 21 1 7 3 62 1  
## P 0 0 0 13 0 40 0 0 2 3 0 0 0 1 0 116  
## Q 0 4 2 2 22 1 17 10 0 11 16 1 0 0 11 6  
## R 2 5 0 15 0 0 3 16 0 9 13 0 14 5 45 2  
## S 1 8 0 0 1 1 0 0 22 7 0 2 0 0 0 0  
## T 0 1 0 0 1 28 0 0 0 0 0 0 0 0 0 11  
## U 6 12 4 1 3 3 16 15 0 0 22 2 6 12 7 0  
## V 3 3 2 0 0 6 0 0 0 0 0 0 0 2 0 7  
## W 0 0 0 0 0 1 1 0 0 0 0 0 24 18 5 0  
## X 0 8 7 3 44 13 4 1 5 4 1 3 0 0 0 0  
## Y 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0  
## Z 0 0 0 0 6 0 0 0 44 4 0 0 0 0 0 0  
## Reference  
## Prediction Q R S T U V W X Y Z  
## A 6 0 8 0 0 0 0 2 0 3  
## B 3 10 11 1 0 0 0 16 1 0  
## C 1 0 0 0 1 0 0 0 0 0  
## D 3 30 4 0 3 1 0 5 2 1  
## E 8 0 1 3 0 0 0 15 0 12  
## F 0 0 3 9 0 0 0 0 14 2  
## G 13 0 0 1 0 0 0 1 0 0  
## H 0 6 1 1 1 0 0 0 0 0  
## I 0 0 21 3 0 0 0 7 1 12  
## J 0 3 9 0 0 0 0 3 0 9  
## K 24 6 1 4 7 1 0 3 2 0  
## L 14 0 8 0 0 0 0 2 0 16  
## M 1 1 0 0 5 0 12 0 0 0  
## N 1 7 0 0 3 0 6 0 4 0  
## O 11 33 0 3 12 2 3 2 0 0  
## P 0 0 1 2 0 0 0 0 0 2  
## Q 64 8 1 1 1 0 0 37 0 1  
## R 4 79 1 0 0 0 0 0 0 0  
## S 0 0 30 1 0 0 0 0 2 16  
## T 0 0 0 110 0 3 0 0 27 0  
## U 8 10 0 6 171 10 3 0 0 0  
## V 1 0 0 12 5 171 1 3 10 0  
## W 0 0 0 0 2 0 172 0 1 0  
## X 10 0 24 6 1 0 0 76 9 8  
## Y 0 0 1 25 0 6 0 16 97 2  
## Z 0 0 54 0 0 0 0 13 1 112  
##   
## Overall Statistics  
##   
## Accuracy : 0.4882   
## 95% CI : (0.4743, 0.5022)  
## No Information Rate : 0.0456   
## P-Value [Acc > NIR] : < 2.2e-16   
##   
## Kappa : 0.4675   
## Mcnemar's Test P-Value : NA   
##   
## Statistics by Class:  
##   
## Class: A Class: B Class: C Class: D Class: E Class: F  
## Sensitivity 0.8030 0.4061 0.7150 0.3822 0.3942 0.3617  
## Specificity 0.9781 0.9700 0.9846 0.9726 0.9810 0.9857  
## Pos Pred Value 0.6023 0.3571 0.6509 0.3561 0.4740 0.4964  
## Neg Pred Value 0.9918 0.9755 0.9885 0.9754 0.9739 0.9753  
## Prevalence 0.0396 0.0394 0.0386 0.0382 0.0416 0.0376  
## Detection Rate 0.0318 0.0160 0.0276 0.0146 0.0164 0.0136  
## Detection Prevalence 0.0528 0.0448 0.0424 0.0410 0.0346 0.0274  
## Balanced Accuracy 0.8906 0.6881 0.8498 0.6774 0.6876 0.6737  
## Class: G Class: H Class: I Class: J Class: K Class: L  
## Sensitivity 0.3234 0.04301 0.2216 0.3297 0.2281 0.7128  
## Specificity 0.9879 0.98484 0.9834 0.9859 0.9685 0.9858  
## Pos Pred Value 0.5285 0.09877 0.3496 0.4729 0.2042 0.6715  
## Neg Pred Value 0.9721 0.96381 0.9690 0.9745 0.9726 0.9883  
## Prevalence 0.0402 0.03720 0.0388 0.0370 0.0342 0.0390  
## Detection Rate 0.0130 0.00160 0.0086 0.0122 0.0078 0.0278  
## Detection Prevalence 0.0246 0.01620 0.0246 0.0258 0.0382 0.0414  
## Balanced Accuracy 0.6556 0.51392 0.6025 0.6578 0.5983 0.8493  
## Class: M Class: N Class: O Class: P Class: Q Class: R  
## Sensitivity 0.7018 0.3687 0.3131 0.6270 0.3721 0.4093  
## Specificity 0.9805 0.9728 0.9663 0.9867 0.9685 0.9721  
## Pos Pred Value 0.6324 0.3350 0.2768 0.6444 0.2963 0.3709  
## Neg Pred Value 0.9857 0.9765 0.9715 0.9857 0.9774 0.9762  
## Prevalence 0.0456 0.0358 0.0396 0.0370 0.0344 0.0386  
## Detection Rate 0.0320 0.0132 0.0124 0.0232 0.0128 0.0158  
## Detection Prevalence 0.0506 0.0394 0.0448 0.0360 0.0432 0.0426  
## Balanced Accuracy 0.8411 0.6708 0.6397 0.8069 0.6703 0.6907  
## Class: S Class: T Class: U Class: V Class: W Class: X  
## Sensitivity 0.1676 0.5851 0.8066 0.8814 0.8731 0.3781  
## Specificity 0.9873 0.9852 0.9695 0.9886 0.9892 0.9685  
## Pos Pred Value 0.3297 0.6077 0.5394 0.7566 0.7679 0.3348  
## Neg Pred Value 0.9696 0.9838 0.9912 0.9952 0.9948 0.9738  
## Prevalence 0.0358 0.0376 0.0424 0.0388 0.0394 0.0402  
## Detection Rate 0.0060 0.0220 0.0342 0.0342 0.0344 0.0152  
## Detection Prevalence 0.0182 0.0362 0.0634 0.0452 0.0448 0.0454  
## Balanced Accuracy 0.5775 0.7852 0.8881 0.9350 0.9311 0.6733  
## Class: Y Class: Z  
## Sensitivity 0.5673 0.5714  
## Specificity 0.9894 0.9746  
## Pos Pred Value 0.6554 0.4786  
## Neg Pred Value 0.9847 0.9824  
## Prevalence 0.0342 0.0392  
## Detection Rate 0.0194 0.0224  
## Detection Prevalence 0.0296 0.0468  
## Balanced Accuracy 0.7783 0.7730