Report for Neural Network on Loan Dataset Example

Dataset : Loan Dataset

Motive: To predict the decision of sanction of the loan using Neural Networks for loan dataset

R-studio code:

Neural Network relevant packages are required to be installed if using Neural Network on R studio for the first time.

```
install.packages("neuralnet")
install.packages("ISLR")
getwd()
setwd("E:/ADS/Assignment/Assignment 6")
```

Load file onto R

```
# Read CSV into R

require(XLConnect)
library(xlsx)
loan= read.xlsx("loan.xlsx",sheetIndex = 1)
```

Convert independent variables into Numeric as Neural Networks accepts numeric values

```
#Convert to Numeric

loan$Res_status<-as.numeric(loan$Res_status)-1
loan$Occupation<- as.numeric(loan$Occupation)-1
loan$Job_Status<-as.numeric(loan$Job_status)-1
loan$Liab_red<- as.numeric(loan$Liab_ref)-1
loan$Acc_ref<-as.numeric(loan$Acc_ref)-1
loan$Decision<-as.numeric(loan$Decision)-1
```

Moving only required columns to another dataframe

```
#Move required columns to one dataframe

myloan<-loan[c("Res_status","Occupation","Job_Status","Liab_red","Acc_ref","Decision")]
library(ISLR)
library(neuralnet)
print(head(myloan))
```

Separate train 90% and test data 10%

```
#Separate Train and Test data

x<-sample(1:nrow(myloan), nrow(myloan)*0.90)
```

```
train_ <- myloan[x,]
test_ <- myloan[-x,]
```

Apply Neural Networks to train dataset

```
#apply neural network

nn <- neuralnet(train_$Decision ~
train_$Res_status+train_$Occupation+train_$Job_Status+train_$Liab_red+train_$Acc_ref,data=trai
n_, hidden=c(2,2,2),linear.output=FALSE, stepmax = 1e6)
```

Predict on Test data

```
predicted.nn.values <- compute(nn,test_[1:5])
predicted.nn.values$net.result <- sapply(predicted.nn.values$net.result,round,digits=0)
table(test_$Decision,predicted.nn.values$net.result)
predicted.nn.values$net.result
```

Plot Neural Network

```
#Plot Neural Network

plot(nn)
```