Neural Net Analysis of Similated Data

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Description

This script will build a Convolutional Neural Network for the data simmulated in the DataSimmulatio.Rmd script.

In completing this script, we desire to complete the following goals:

1. Partition data into training, test, and validation sets. The training and test sets should allow for iterative cross-validation, and the validations set may be small, and will be used primarily for ensuring the efficacy of the model.
2. Perform the model fitting process on the training data sets, and test for over-fitting using the test data sets defined through cross validation.
3. Compare model estimates for edge weights and biases to those generated in Alan's presentation.

4. Determine if results are more similar in certain scenarios, and recommend further methodological enhancements to better replicate Alan's results.

Script Dependencies

Package Dependencies

```
library(neuralnet)
```

Working Directory

```
WD="/Users/lee/Documents/Lee/School/CU Denver/Spring 2020/Math6630Consulting/AlanMalik_EducProbScore/
setwd(WD)
```

Load Data

```
load(file = "/Users/lee/Documents/Lee/School/CU Denver/Spring 2020/Math6630Consulting/AlanMalik_EducP
df.uniform=df_uniform

load(file = "/Users/lee/Documents/Lee/School/CU Denver/Spring 2020/Math6630Consulting/AlanMalik_EducP
df.beta22=df_beta22

load(file = "/Users/lee/Documents/Lee/School/CU Denver/Spring 2020/Math6630Consulting/AlanMalik_EducP
df.beta25=df_beta25

rm(df_uniform)
rm(df_beta22)
rm(df_beta25)
```

Part (1)

We will separate our data into 10 subsets, which we can use for training and testing:

```
index.i=list()
data.i=list()

for(i in 1:10){
  index.i[[i]]=sample(1:1000, 100, replace=FALSE)
}

for(i in 1:10){}
```