Tutorial 10 :ANN

1. Load the College Data Set from the ISRL package. Perform exploratory data analysis of the College dataset. Refer to <https://bookdown.org/rdpeng/exdata/exploratory-data-analysis-checklist.html> on what steps is necessary to be done in performing exploratory data analysis.

2. Neural networks needs to be normalized before training, as converging before max iterations is difficult without normalization. We should scale to 0-1 or to -1 to 1. Scale the college dataset and save it as a new dataset.

3. Use the Private column as a class label. Divide the data into training and test set of 70:30 ratio.

4. Use the neuralnetwork() function to create a NN model. You need to enter a formula, f as the neuralnetwork() function won't accept the typical decimal R format for a formula involving all features (e.g. y ~.) The neuralnetwork() function is found in the neuralnet package.

f can be formulated as

Private ~ Apps + Accept + Enroll + Top10perc + Top25perc + F.Undergrad + P.Undergrad + Outstate + Room.Board + Books + Personal + PhD + Terminal + S.F.Ratio + perc.alumni + Expend + Grad.Rate

5. Run the testing set through the created NN , display the confusion matrix and plot the created NN.