Report on the Neural Network Model

# Overview of the Analysis

The purpose of this analysis is to help the non-profit foundation Alphabet Soup in creating a tool to assist with the selection of applicants for funding with the best chance of success in their ventures.

This neural network model is designed to process the provided data with 34,000 historical records, create a binary classifier in the process to predict whether applicants will be successful if funded by Alphabet Soup.

# Results

## Data Preprocessing

* What variable(s) are the target(s) for your model?
  + IS\_SUCCESSFUL
* What variable(s) are the features for your model?
  + NAME, APPLICATION\_TYPE, AFFILIATION, CLASSIFICATION, USE\_CASE, ORGANIZATION, STATUS, INCOME\_AMT, SPECIAL\_CONSIDERATIONS, ASK\_AMT
* What variable(s) should be removed from the input data because they are neither targets nor features?
  + EIN

## Compiling, Training, and Evaluating the Model

* How many neurons, layers, and activation functions did you select for your neural network model, and why?
  + In the initial attempt, 2 hidden layers were chosen with relu and sigmoid activation functions. Number of neurons chosen were 50, 25 and 1. Achieved accuracy was 72.52%.

Text

Description automatically generated

* Were you able to achieve the target mode performance?
  + Yes
* What steps did you take in your attempts to increase model performance?
  + In the following attempts, I retained the name column and binned accordingly. Another hidden layer was added, with the number of neurons chosen at 80, 50, 25 and 1. The final attempt produced an accuracy of 78.56%.

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# Summary

Overall results are quite pleasing, as I was able to achieve the targeted accuracy. It can also be concluded that keeping the name column is crucial in achieving the targeted performance. Further tweaks and optimisation may result in this model pushing past 80% accuracy; thus this model can be used for prediction of success.