Neural Network Model Analysis

1. **Overview** of the analysis: Explain the purpose of this analysis?

The purpose of this analysis is to train a machine learning model with neural network to create a binary classifier that can predict whether applicants will be successful if they are funded by Alphabet Soup.

1. Data Preprocessing

What variable(s) are considered the target(s) for your model:

* The variable that was considered the target is whether the applicant is successful or not. If we look at the data set it would be the IS\_SUCCESFUL column.

What variable(s) are considered to be the features for your model?

* The variables that are the features of this model are the other categories in the dataset.

What variable(s) are neither targets nor features, and should be removed from the input data?

* Some variables that were neither targets nor features include the EIN and Name columns. I chose the cut off value for the application types for values that had less than 500. The cut off value for classification type was 1000.

1. Compiling, Training, and Evaluating the Model

How many neurons, layers, and activation functions did you select for your neural network model, and why?

* For my neural network model, the layers ranged from 2-3, neurons were 100, and the activation function used was relu and sigmoid. This configuration was used to reach an accuracy score of 75%.

Were you able to achieve the target model performance?

* No, I was not able to reach the target. The closest I got was a little over 72%.

What steps did you take to try and increase model performance?

* Some steps I took to increase the model performance was to add a 3rd layer and change the value the nodes. With these slight changes there was a very little change to the accuracy score.

1. Summary

* 72% accuracy was the highest I got with my deep learning model. I would recommend using Random Forest to give us a better insight on this data. Random Forest would be able to handle the size of the data and in turn give us more accurate score.