**Neural Network Model Analysis**

Overview:

The purpose of this exercise is to determine whether applicants will be successful if funded by Alphabet Soup. To determine the results, we are building predictive models to predict the outcome.

Results – Data Processing:

* The “IS\_SUCESSFUL” column is our target. We are measuring the other variables against this
* All other variables in the data frame are features of the model
* The variables that are neither targets nor features are the “EIN” and the “NAME” columns as they do not affect the prediction

Results – Compiling, Training, and Evaluating the Model:

* In the first model, I went with two layers and trained the model 50 times. See below example:

Graphical user interface, text, email

Description automatically generated

A picture containing text

Description automatically generated

Graphical user interface, text, application

Description automatically generated

I decided to go for a high number of neurons because of the dataset size. Since I was not able to achieve the desired 75% accuracy score, I decided to increase the number of neurons in the second model and increased the training number to 100 in hopes of bringing the accuracy score higher.

After the second model, the accuracy score increased ever so lightly. In the third model, I decided to add another hidden layer to see if that would be able to bring the accuracy score closer to the desired 75%. However, it did not produce the desired outcome.

Summary:

Of the three models that I ran predictive analysis on this dataset, I was not able to achieve a 75% accuracy outcome. However, I do understand that it can be dangerous when we get up to 90% accuracy as it can often lead to an overfit.

My recommendation would be to run a Random Forest Classification model as we established in the previous homework that this model tends to produce a higher accuracy score as it combines the predictions of many decision tress into a single model thus producing a model with higher accuracy scores.