In this analysis, data gathered from funding applications was processed through a neural network model to predict whether or not the applicants would be successful in their ventures if their application for funding was approved by Alphabet soup.

After dropping the ‘NAME’ and ‘EIN’ columns from the dataset, the target variable (y) would be the ‘IS\_SUCCESSFUL’ column. This what we are ultimately trying to predict.

The features of the dataset would be the following remaining columns:

* APPLICATION\_TYPE
* AFFILIATION
* CLASSIFICATION
* USE\_CASE
* ORGANIZATION
* STATUS
* INCOME\_AMT
* SPECIAL CONSIDERATIONS
* ASK\_AMT

While not done is this particular analysis, variables that could be removed would be STATUS and SPECIAL\_CONSIDERATIONS as they do not appear to contain any meaningful data that would influence the model.

The model was run a total of three (3) times in order to achieve the target 75% accuracy:

1st attempt: 10 neurons, 2 layers, 250 epochs; **Result:** 72.45% accuracy

2nd attempt: 50 neurons, 2 layers, 250 epochs, **Result:** 72.47% accuracy

3rd attempt: 75 neurons, 3 layers, 400 epochs, **Result:** 72.63% accuracy

Unfortunately, 75% accuracy was unable to be achieved. After the initial 72.45% result, the number of neurons, layers, and epochs were increased but minimal success was achieved in increasing the accuracy. The activation function ReLu was used within the hidden layers while Sigmoid was used in the output layer.

Since the target 75% accuracy was not achieved, it is recommended that other activation functions like tanh be used in attempt to see the difference in results and whether or not the accuracy increases. Also, it may be helpful to increase the number of iterations again and maybe adding one additional layer to see the effect that has on this dataset. Other models such as a Logistic Regression model may be helpful as well.