**Report on the Neural Network Model**

**An Overview**:

The purpose of this analysis is to try and predict for the non-profit foundation Alphabet Soup, whether funding an applicant will be successful or not.

**Results**:

* Data Preprocessing:

The target of the data was column “IS\_SUCCESSFUL”, and the feature variables were the following:

* + - * Application\_Type
      * Affiliation
      * Classification
      * Use\_Case
      * Organization
      * Status
      * Income\_amt
      * Special\_considerations
      * Ask\_amt

EIN and NAME were dropped from the dataFrame.

* **Compiling, Training, and Evaluating the Model**

I had two 2 hidden layers using relu activation and an outer layer using sigmoid activation. The first hidden layer had 44 units followed by the second layer having 30 units. The final output layer has 1 unit using sigmoid activation.

Unfortunately, I wasn’t able to reach the target performance of 75% accuracy with these layers. I achieved 72.4% accuracy.

I used 2 methods to try and increase the accuracy of my model. The first method I tried was a function that automatically creates a model with various layers and activations and neurons to try and determine the best possible parameters. Using keras\_tuner I was still only able to achieve an accuracy score of 72.8%

The second method I used was trying to manually alter my model. I used 3 different methods including changing the activation, changing the number of layers, and changing the number of epochs used.

**Summary**: Overall, I have created a deep learning model that is about 72% accurate in determining whether an application for funding will be successful or not. My recommendation for a different model could possible be feature selection or DBSCAN. I recommended feature selection because you could possible run that before you run your neural network model to determine which features are important and carry the most weight. On top of that, DBSCAN is great for classification problems such as this.