Neural Network Model

1. **Overview** of the analysis:

Using my knowledge of TensorFlow, I will design a neural network, or deep learning model, to create a binary classification model that can predict if an Alphabet Soup-funded organization will be successful based on the features in the dataset. Then I will compile, train, and evaluate your binary classification model to calculate the model’s loss and accuracy. The goal is to achieve a target predictive accuracy higher than 75%.

1. **Results**:

Data Preprocessing

* + What variable(s) are the target(s) for your model?

IS\_SUCCESSUL

* + What variable(s) are the features for your model?

All columns that were not removed in pre-processing.

* + What variable(s) should be removed from the input data because they are neither targets nor features?

EIN and NAME

Compiling, Training, and Evaluating the Model

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

Kerastuner search for best model hyperparameters yielded 6 neurons, 1 layer, and was activated using tanh.

* + Were you able to achieve the target model performance?

Using this model, I was able to achieve a 73.4% accuracy rate.

1. **Summary**:

The original data set was trained with 3 inputs using a sequential model and a sigmoid activation and yielded results with 73% accuracy. I used the Kerastuner method to find the optimal hyperparameters. The results of this yielded a model with 6 neurons, 1 layer, and activation using tanh and achieved 73.4% accuracy. The two models achieved very similar results. Preprocessing the data and removing the two columns that added no value (EIN and NAME) was an important step.