**Charity Funding Predictor**

**Analysis**

**Overview**:

This analysis is broken into three steps and a breakdown of these steps are as follows:

**Step 1:** Preprocess the Data Using Pandas and scikit-learn’s StandardScaler(), I will preprocess the dataset. This step prepares me for Step 2, where I compile, train, and evaluate the neural network model.

With the data in the charity\_data.csv file I will determine:

What variable(s) are the target(s) the your model? What variable(s) are the feature(s) for the model? The number of unique values for each column.

**Step 2:** Compile, Train, and Evaluate the Model I designed a 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 the binary classification model to calculate the model’s loss and accuracy.

**Step 3:** Optimize the Model Next, I will optimize the model to achieve a target predictive accuracy higher than 75%.

I used the following methods to optimize the model:

Adjusted the input data to ensure that no variables or outliers are causing confusion in the model, such as:

Dropping more or fewer columns. Creating more bins for rare occurrences in columns. Increasing or decreasing the number of values for each bin.

Add more neurons to a hidden layer. Add more hidden layers. Use different activation functions for the hidden layers. Add or reduce the number of epochs to the training regimen.

**Results**:

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Data Preprocessing

The target and chosen features for this model are as follows:

* Target variables are the ‘CLASSIFICATION’ and ‘APPLICATION\_TYPE’ columns.
* The IS\_SUCCESSFUL columns

EIN and the Name columns should be removed from this dataset

Compiling, Training, and Evaluating the Model

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

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Were you able to achieve the target model performance?

The target was an accuracy of over 75% and our model achieved 72%

What steps did you take in your attempts to increase model performance?

Increasing the epochs levels

**Summary**:

* The model's best result employing the different numbers of neurons and layers was a 72.8% accuracy for the relu and sigmoid activations. With a loss of 55%
* Recommendation is to increase epoch levels to reach at least 75% model accuracy