Overview:

This repository creates a binary classification model to predict whether an organisation funded by the fictional company 'Alphabet Soup' will be successful by training the model on a variety of features within the provided dataset (CSV file covering more than 34,000 organisations).

Results:

Our initial attempt at creating a model (AlphabetSoupCharity.h5) had an accuracy score of 73.03%.

Decisions that lead to this included cutting off our Application Type column to include rows greater than 500 and then combine the rest of the rows values as an "Other" Value. The same was done for the Classification column, but the cutoff value was 1,000 this time.

Our neural network consisted of 2 hidden layers initially. The first layer contained 80 neurons and used the 'relu' activation function. The second layer was using 30 neurons and once again used the 'relu' activation function. The model was then trained for 100 epochs.

I made a variety of changes to the model but found that only very slight improvements were able to be made on the original attempt. Some changes that were attempted included:

- Changing the cutoff values for Application Type & Classification.
- Adding neurons to the hidden layers.
- Adding more hidden layers.
- Adding dropout layers.
- Changing activation method.
- Increasing or decreasing epochs.

After around 50 variations, the model was improved, but still limited, to a final accuracy of 73.08% showing that our first attempt was almost as good as we were able to make the model. The final cutoff values had remained the same for Application Type, but had changed for Classification to 500 which showed minor improvements in the model. The epochs had been reduced to 90 to account for any overfitting, and the final layers looked as such:

Layer 1 – Neurons: 350, activation: relu

New Dropout Layer: 0.4

Layer 2 – Neurons: 200, activation: relu

New Dropout Layer: 0.4

New Layer 3 – Neurons: 250, activation: relu

Summary:

The model initially had a positive result with an accuracy of 73.03%, and after multiple attempts of changing values, layers and methods, the highest accuracy achieved was 73.08% which can be found in the AlphabetSoupCharity_Optimisation file. Unfortunately it was not possible for the model to achieve the 75% target with the columns used and another model would potentially be able to achieve the target accuracy.