**Overview**

The purpose of this analysis is to create a binary classification model using deep learning techniques to predict whether organizations funded by Alphabet Soup will be successful based on various features provided in the dataset. Attributes: application type, affiliation, classification, use case, organization type, income amount, funding amount requested, and special considerations about 34,000 organizations.

**Results**

Target Variable: IIS\_SUCCESSFUL, which indicates whether the funding by Alphabet Soup was successful or not

Feature Variables: include all the other columns in the dataset except EIN, NAME, IS\_SUCCESSFUL.

Variables Removed: EIN and NAME columns as they are identification columns and do not provide useful information for prediction.

**Compiling, Trainin**g, and Evaluating the Model

Neurons, Layers, and Activation Functions: We designed a neural network model with 3 hidden layers. The number of neurons (80, 30) in each hidden layer and the activation functions were chosen based on experimentation and tuning. We used ReLU activation functions for the hidden layers and a sigmoid activation function for the output layer to perform binary classification.

Target Model Performance: The model achieved an accuracy of approximately 72.44% on the test dataset. The model did not meet the target performance 75%

**Steps Taken to Improve Model Performance**

Drop two columns, "ORGANIZATION", "SPECIAL\_CONSIDERATIONS". Add the third hidden layer. Change number of epochs to 105, and number of periods to 7. However, despite these attempts, unable to achieve the target performance.

**Summary**

In summary, the deep learning model developed provides a decent level of accuracy in predicting whether organizations funded by Alphabet Soup will be successful. However, there is still room for improvement to meet the target performance threshold.