## **Report**

**Overview of Analysis**

Alphabet Soup, a nonprofit foundation, is seeking our expertise to develop a binary classifier. This classifier will leverage machine learning and neural network techniques to predict whether candidates who receive funding from Alphabet Soup will be successful. The prediction will be based on a variety of features provided in the dataset.

**Results**

**Data Preprocessing**

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

The target variable is the ‘IS\_SUCCESSFUL’ column

* + What variable(s) are the features for your model?
    - APPLICATION\_TYPE
    - AFFILIATION
    - CLASSIFICATION
    - USE\_CASE
    - ORGANIZATION
    - STATUS
    - INCOME\_AMT
    - SPECIAL\_CONSIDERATIONS
    - ASK\_AMT
  + What variable(s) should be removed from the input data because they are neither targets nor features?
    - EIN
    - NAME

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

* + How many neurons, layers, and activation functions did you select for your neural network model, and why?
* **80 Neurons in Layer 1:** This number helps the model capture complex patterns in the data.
* **30 Neurons in Layer 2:** This helps refine and reduce the data from the first layer to
  + Were you able to achieve the target model performance?

For this attempt I was only able to achieve an accuracy score of 72.3% as shown in the screenshot below.

* + A screenshot of a computer code

    Description automatically generated
  + What steps did you take in your attempts to increase model performance?

A screenshot of a computer program

Description automatically generated

1. **Summary**: Summarize the overall results of the deep learning model. Include a recommendation for how a different model could solve this classification problem, and then explain your recommendation.

A screenshot of a computer

Description automatically generated

While the neural network model is a good option for this analysis, using models like Random Forest can also be very effective. Random Forest is great for avoiding overfitting and understanding which features are important. Trying this model can help us find the best solution for predicting the success of funding applicants.