**Report on the Neural Network Model**

For this part of the Challenge, you’ll write a report on the performance of the deep learning model you created for AlphabetSoup.

The report should contain the following:

**Overview of the analysis: Explain the purpose of this analysis.**

The purpose of this analysis is to be able to predict if an applicant will be successful, based on Alphabet Soup application type, affiliated sector of industry, organization classification, use case for funding, organization type, active status, income classification, special consideration for application, and funding amount requested.

**Results: Using bulleted lists and images to support your answers, address the following questions.**

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

The target is highlighted below, called IS\_SUCCESSFUL.

A picture containing graphical user interface

Description automatically generated

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

The features of the model are not highlighted above. Called:

* APPLICATION\_TYPE
* AFFILIATION
* CLASSIFICATION
* USE\_CASE
* ORGANIZATION
* STATUS
* INCOME\_AMT
* SPECIAL\_CONSIDERATIONS
* ASK\_AMT
  + What variable(s) are neither targets nor features, and should be removed from the input data?

The following variables are not included in picture above, because they are neither targets nor features and were removed:

* 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?

I decided to use

* Two layers,
* 80 neurons in the first layer,
* 30 neurons in the second layer,
* And ReLU for the activation function.

These decisions were made for performance reasons. ReLU is computationally simple and effective. I tried using more layers and neurons, but the accuracy decreased, and loss increased. Since it worked opposite than expected, I reverted to the original layers and neurons.

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

I was not able to meet the target model performance.

* + What steps did you take to try and increase model performance?

To try to increase model performance, I increased the number of neurons, the number of layers and removed SPECIAL\_CONSIDERATIONS. These steps decreased the percentage of accuracy.

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

Since I couldn’t achieve the target model performance, I suggest using a different model. Random Rain Forest as it might be more accurate. We need a classification and there might be some outliers