Analysis of the Models

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

The report should contain the following:

Q1- Overview of the analysis: Explain the purpose of this analysis.

The nonprofit foundation Alphabet Soup wants a tool that can help it select the applicants for funding with the best chance of success in their ventures. Using machine learning and neural networks, we use the features in the provided dataset to create a binary classifier that can predict whether applicants will be successful if funded by Alphabet Soup.

Q2- Results: Using bulleted lists and images to support your answers, address the following questions:

Data Preprocessing

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

Our target is the "y" which is the "IS\_SUCCESSFUL" column.

What variable(s) are the features for your model?

Our features is the "X" which is everything but the "IS\_SUCCESSFUL" column as: "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" were removed from variables, since they are neither targets nor features.

Compiling, Training, and Evaluating the Model

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

I had 3 tries trying to get to best & highest accuracy.

1st attempt: 3 hidden layers & an outer layer, layer 1: 70 neurons, relu activation, layer 2: 14 neurons, relu activations, layer 3: 21 neurons, relu activation, and Outer layer: 1 neuron, sigmoid activation & adam optimizers for complier.

2nd attempt: 4 hidden layers & an outer layer, layer 1: 150 neurons, relu activation, layer 2: 200 neurons, relu activations, layer 3: 175 neurons, relu activations, layer 4: 100 neurons, relu activations, and Outer layer: 1 unit, sigmoid & adam optimizers for complier.

3rd attempt: 3 hidden layers & an outer layer, layer 1: 150 neurons, relu activation, layer 2: 200 neurons, relu activations, layer 3: 175 neurons, relu activations, and Outer layer: 1 unit, sigmoid & adam optimizers for complier.

The reason for choosing the relu activation function is because it is the most used function in neural networks. As far as the number of neurons and hidden layers, I was hoping that adjusting the number of each of these would help the model process the data better.

Were you able to achieve the target model’s performance? Unfortunately, no. The highest accuracy I was able to achieve was 0.7392 on my second attempt.

What steps did you take in your attempts to increase model performance? After cleaning & removing the none features, I tried using a different number of layers, and neurons for each attempt.

Q3- 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.

Unfortunately, the differences between all 3 tries were not major. Maybe adjusting the number of neurons per layer might do the trick. Also consider using different activation functions as I only used one for this module.