

## **Report:**

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

- The assignment's purpose to predict the applicants' chance of success.

### **Data Preprocessing**

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

Target variable in the model is "IS\_SUCCESSFUL".

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

APPLICATION\_TYPE, AFFILIATION, CLASSIFICATION, USE\_CASE, ORGANIZATION, INCOME\_AMT, SPECIAL\_CONSIDERATIONS.

- 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?

Started off the model with 2 layers and 80, 20 neurons, and used "relu".

- Were you able to achieve the target model performance?

No, accuracy had a slight increase as I changed the number of layers in the model, but remained around 72-73%, but was unable to achieve the desired 75% accuracy.

- What steps did you take in your attempts to increase model performance?

I kept changing the layers of the model, I started off with two layers with 80 and 20 neurons, then increased to 4 layers with a range of neurons from 70 to 150, lastly I increased another 4 layers and neurons ranged from 180 to 40 and by 20 increments.

```
# Define the model - deep neural net, i.e., the number of input features and hidden nodes for each layer.
input_features = len(X_train[0])

nn = tf.keras.models.Sequential()

layer1_nodes = 80
layer2_nodes = 20
```

```
# Define the model - deep neural net, i.e., the number of input features and hidden nodes for each layer.
input_features = len(X_train[0])

nn = tf.keras.models.Sequential()

layer1_nodes = 150
layer2_nodes = 130
layer3_nodes = 100
layer4_nodes = 70
```

```
# Define the model - deep neural net, i.e., the number of input features and hidden nodes for each layer.
input_features = len(X_train[0])

nn = tf.keras.models.Sequential()

layer1_nodes = 180
layer2_nodes = 160
layer3_nodes = 140
layer4_nodes = 120
layer5_nodes = 100
layer6_nodes = 80
layer7_nodes = 60
layer8_nodes = 40
```

**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.

The accuracy of the model did not improve by much as I added more layers, I could also try to change up the increments of number of neurons between each layer and see if the result will be different.