

## Overview :

**The non-profit foundation Alphabet soup wanted a tool to help them select applicants for funding. They need a binary classifier to predict whether applicants will be successful if funded by Alphabet soup. However, they require careful training and selection of architecture to avoid potential limitations.**

## Data Pre-processing:

Unnecessary metrics such as EIN and Name were removed from the dataset and all remaining metrics were considered in the model.

- What variable(s) are the target(s) for your model?
- What variable(s) are the features for your model?
- What variable(s) should be removed from the input data because 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?
- Were you able to achieve the target model performance?
- What steps did you take in your attempts to increase model performance?

Neural Network was used on each model on each model and originally set with 2. For the final model , 3 layers were added that helped achieve an accuracy of over 75%.

## Compile, Train and Evaluate the Model

```
] 1 # Define the model - deep neural net, i.e., the number of input features and hidden nodes for each layer.
2 input_features = X_train_scaled.shape[1]
3 hidden_nodes1=7
4 hidden_nodes2=14
5 hidden_nodes3=21
6
7 nn = tf.keras.models.Sequential()
8
9 # First hidden layer
10 nn.add(tf.keras.layers.Dense(units=hidden_nodes1, input_dim=input_features, activation='relu'))
11
12 # Second hidden layer
13 nn.add(tf.keras.layers.Dense(units=hidden_nodes2, activation='relu'))
14
15 # Third hidden layer
16 nn.add(tf.keras.layers.Dense(units=hidden_nodes3, activation='relu'))
17
18 # Output layer
19 nn.add(tf.keras.layers.Dense(units=1, activation='sigmoid'))
20
21 # Check the structure of the model
22 nn.summary()
```

Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 7)	1967
dense_1 (Dense)	(None, 14)	112
dense_2 (Dense)	(None, 21)	315
dense_3 (Dense)	(None, 1)	22

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Total params: 2,416  
Trainable params: 2,416  
Non-trainable params: 0