

Report:

Objective of Analysis:

The primary aim of this analysis is to forecast the likelihood of success for applicants.

Data Preparation:

The target variable for our model is labeled "IS_SUCCESSFUL".

The features feeding into our model include APPLICATION_TYPE, AFFILIATION, CLASSIFICATION, USE_CASE, ORGANIZATION, INCOME_AMT, SPECIAL_CONSIDERATIONS.

Variables that are irrelevant to our model's predictive capabilities, and hence should be excluded from the input dataset, are EIN and NAME.

Model Development and Assessment:

The initial architecture of the neural network began with two layers, housing 80 and 20 neurons respectively, with the ReLU activation function. This choice was made to establish a baseline for model performance.

Despite modifications to the model structure, the accuracy plateaued at approximately 72-73%, falling short of the 75% accuracy target.

In efforts to boost performance, I iteratively enhanced the model by varying the layers and neurons, starting with two layers (80 and 20 neurons) and incrementally increasing to four layers, adjusting the neuron count from 70 to 150. Subsequently, I augmented the model further to eight layers, with neuron counts varying from 40 to 180 by increments of 20.

Initial model setup

```
nn = tf.keras.models.Sequential()
```

```
layer1_nodes = 80
```

```
layer2_nodes = 20
```

Revised model setup with additional layers and neurons

```
nn = tf.keras.models.Sequential()
```

```
layer1_nodes = 150
```

```
layer2_nodes = 150
```

```
layer3_nodes = 100
```

```
layer4_nodes = 70
```

Concluding Remarks:

The model's accuracy showed minimal improvement with the increased complexity of the neural network. For future iterations, one could experiment with varying the neuron increments between layers to potentially uncover more optimal configurations.