Report on the Neural Network Model

Overview

The purpose of this challenge is to provide Alphabet Soup a tool that can predict whether applicants will be successful if funded by the nonprofit foundation.

Results

- Data Processing

    What variable(s) are the target(s) for your model?
    The target variables are values of column “IS_SUCCESSFUL”

    What variable(s) are the features for your model?
    All columns are features of the model save two columns.

    What variable(s) should be removed from the input data because they are neither targets nor features?
    The “EIN” and “NAME” were both irrelevant as neither are target or feature.

- Compiling, Training, and Evaluating the Model

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

    There were two hidden layers (18 and 10 neurons) were used. For the first optimisation model, 25 and 11 neurons with same layers were used. The second optimisation has 25, 11, and 11 neurons were used.

    Were you able to achieve the target model performance?

    No models were able to achieve the desired 75% performance

    What steps did you take in your attempts to increase model performance?
    In the hidden layers the activation functions is ‘relu” while the output layer is ”sigmoid” as it is binary.

- **Summary**

The desired performance of 75%was not achieved using the three models. The model was compiled with the Adam optimizer, binary cross-entropy loss function, and accuracy as a metric. The training was conducted for 100 epochs with a batch size of 32, using 20% of the training data for validation.

The model's performance metrics, such as training accuracy, validation accuracy, training loss, and validation loss, should be analyzed to assess its effectiveness. Common observations could include whether the model is overfitting or underfitting and how well it generalizes to unseen data.

It might be beneficial to explore other models to see if they can provide better performance for this classification problem.

Report on the Neural Network Model

Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 18)	792
dense_1 (Dense)	(None, 10)	190
dense_2 (Dense)	(None, 1)	11

Total params: 993 (3.88 KB)

Trainable params: 993 (3.88 KB)

Non-trainable params: 0 (0.00 B)

Model: "sequential_3"

Layer (type)	Output Shape	Param #
dense_10 (Dense)	(None, 25)	1,100
dense_11 (Dense)	(None, 11)	286
dense_12 (Dense)	(None, 1)	12

Total params: 1,398 (5.46 KB)

Trainable params: 1,398 (5.46 KB)

Non-trainable params: 0 (0.00 B)

Model: "sequential_2"

Layer (type)	Output Shape	Param #
dense_8 (Dense)	(None, 25)	1,100
dense_9 (Dense)	(None, 11)	286
dense_10 (Dense)	(None, 11)	132
dense_11 (Dense)	(None, 1)	12

Total params: 1,530 (5.98 KB)

Trainable params: 1,530 (5.98 KB)

Non-trainable params: 0 (0.00 B)