

Deep Neural Network Challenge

Overview

Alphabet Soup, a nonprofit foundation, aims to enhance its funding selection process by leveraging machine learning and neural networks. The objective of this challenge was to develop a binary classifier capable of predicting the success of ventures funded by Alphabet Soup. This classifier was trained on a comprehensive dataset (pulled from `charity_data.csv`) comprising over 34,000 organizations that have previously received funding from Alphabet Soup.

Results

- Data Preprocessing
 - 'IS_SUCCESSFUL' is the target variable
 - All the other variables (not including 'EIN' and 'NAME') are the feature variables
 - 'EIN' and 'NAME' were removed from the dataset
- Compiling, Training, and Evaluating the Model
 - 4 layers, with 141 neurons, were selected for this model. Originally, the model only contained 3 layers with 111 neurons, but the accuracy score did not go past 73% accuracy.

Model: "sequential_2"

Layer (type)	Output Shape	Param #
dense_3 (Dense)	(None, 80)	3,520
dense_4 (Dense)	(None, 30)	2,430
dense_5 (Dense)	(None, 1)	31

Total params: 5,981 (23.36 KB)

Trainable params: 5,981 (23.36 KB)

Non-trainable params: 0 (0.00 B)

```
# Evaluate the model using the test data
model_loss, model_accuracy = nn.evaluate(X_test_scaled,y_test,verbose=2)
print("Attempt: 1")
print(f"Loss: {model_loss}, Accuracy: {model_accuracy}")
```

Python

268/268 - 0s - 2ms/step - accuracy: 0.7255 - loss: 0.5574
Attempt: 1
Loss: 0.5574278235435486, Accuracy: 0.7254810333251953

- By adding a 4th layer *and* changing the optimizer, I was unable to reach an accuracy score of 75% or higher.
- To increase performance, I played around with the layers, number of neurons, and optimizer used in the model.