Deep Learning Analysis of AlphabetSoupCharity

Neural Network Model

**Overview**

Alphabet Soup is a non-profit foundation that wants to create an algorithm to predict whether or not applicants for funding will be successful. With my knowledge of Machine Learning I will create a binary classifier with the features that are provided in this dataset in order to predict whether applicants will be successful if funded by Alphabet Soup.

* Variables considered target for my model was APPLICATION\_TYPE and CLASSIFICATION 
* All other columns were considered Features
* 
* EIN and Name was not considered to be features nor targets

Compiling, Training, and Evaluating the Model

* I had a total of 110 neurons layers and 1 activation function to see how the accuracy would be with more layers
* I achieve the target model performance of 70%
* I added more layers to see if the performance would change, I decrease the epochs to see if the performance would change. I changed the active functions but nothing would increase the accuracy with everything I done.
* Graphical user interface, text, application

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* Text

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* It took 100 epochs to reach an accuracy of 73%
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* Graphical user interface, text, application

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Analysis on AlphabetSoupCharity\_Optimization

* I tried to get an accuracy over 75% by manipulating the data from the Neural Network Model by changing functions, adding layers nodes, increasing the bins for both targets Application\_Type and Classifications but the number still was at about 72%. Therefore, I added another target “NAME” along with the other targets Application\_Type and Classification. Added 2 different node hidden layers units, 1 function, used TensorFlow Keras functionality which I received an accuracy of at least 80% after the 38 epoch was reached the accuracy increased to 80%.
* Split the data into Train and Test
* Instances of StandardScaler
* Transformed the data

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It appears that it only took about 7 epochs to get the accuracy to 80%. I think more data you implement in the model predicted a better accuracy that had less loss. I would conclude that you need more information to determine whether or not AlphabetSoupCharity is successful.

Table

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As the epochs ran the accuracy number did increase.

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The test data to evaluate the model accuracy was 78% and loss was 0.5. This is a better prediction than the first model. Therefore, I recommend more data to targets is needed to achieve the accuracy of 75% or higher to make any conclusions about the success of AlphabetSoupCharity, in my opinion.

Text

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