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Data Analytics Bootcamp

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Deep Learning Module Assignment

Overview:

The company, Alphabet Soup, wants a way to select applicants for funding with the best chance of success in their business ventures. With what I have learned in machine learning in the past three weeks, I think my knowledge could provide a solution to their problem. My assignment was to create a binary classifier that can predict whether applicants will be successful if funded by Alphabet Soup.

I was given a CSV file that contained a wide array of information about each applicant. I then preprocessed the data for the data to be better suited to be input into the machine learning.

I then create a neural network model that at first had one input layer, 2 hidden layers, and one output layer, and ran the model with 50 epochs, and got an accuracy score of 72 percent. At first this did reach the target accuracy of 75 percent. I decided to go a different route with my first optimization attempt. With my second model, I decided to add a third hidden layer that had 10 units. This also did not produce an outcome that met the target accuracy percentage. For my second optimization attempt, I decided to change the activation types for the layers. This also did not provide a model that reached the target accuracy percentage. For my third and final optimization attempt, I decided that I would increase the number of epochs, to give the model more chances to raise accuracy. This also did not produce a accuracy score higher than 75%.

Results:

* What variables are the target for your model?
  + The target variable is the “IS\_SUCCESSFUL” column.
* What variables are the features for your model?
  + The feature variables are all the columns that are not “IS\_SUCCESSFUL”
* What variables should be removed from the input data because they are neither target nor features?
  + The “EIN”, and “NAME” columns because we dropped those columns in the beginning.
* How many neurons, layers, and activation functions did you select for your neural network model?
  + I chose to initially do one hidden layer, and two different activation functions. Input layer had 16 units, the first hidden layer had 16 units, and the output layer had one unit.
* Were you able to achieve the target model performance?
  + I was not able to achieve target performance in any of my four different models. They all hovered around 72-73%.
* What steps did you take in your attempts to increase model performance?
  + First, I decided to add another hidden layer. Second, I tried to change the activation function types. Finally, third, I decided to try and add more epochs. None of these strategies worked.

Summary: To summarize, the neural network model that I used did not sufficiently reach the target accuracy percentage of 75%. In trying different strategies, and changes my methods, the model showed no improvement. I think another classification model would better suit the problem of determining whether Alphabet Soup should give certain companies funding or not.