**Final Report**

The deep neural network machine learning model created for AlphabetSoup was moderately useful in predicting whether a loan to an applicant will produce successful results. The predictive accuracy never quite reached 75%, although it got closer when additional optimization tests were run. Additional layers did not make much of a difference, but when I went back to re-examine the data and eliminated outliers in the “Ask\_Amount” column, there was improvement. There are likely other modifications that can be made to the data that could improve the predictability of the model, or perhaps other models may do better with this data set.

The target feature for this model was the column of data that recorded whether the company was successful or not. The features included application type, affiliation, classification, use case, organization, status, income amount, special considerations and ask amount. The columns that were dropped were EIN and Name. It may have been helpful to further examine the Company Names but that is for another time.

I initially tried 2 layers with 8 and 5 nodes and 50 epochs. Increasing the number of layers, along with the nodes got us closer to the target 75% but after trying several combinations, the model really did not improve. I used Relu activation function because that seems to be the easiest and most popular one.

In conclusion, this analysis demonstrates a useful procedure for implementing a deep learning model, but since I am a novice to the subject, I will have to spend more time sharpening my skills in order to be confident in building a model that demonstrates a higher accuracy.

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