**Report on the Neural Network Model**

**Overview:**

The purpose of this analysis is to build and optimize a deep learning model to predict the best success rate of applicants trying to receive funding from Alphabet Soup Foundation. The goal of this analysis is to train and optimize the model to improve accuracy each time. By training the neural network with specific features such as organization type, income, and requested funding amount, this will help determine if an applicant has high success rate for future funding.

**Results:**

* **Data Pre-processing**
  + What variable(s) are the target(s) for your model?
    - The target variable is the column “IS\_SUCCESSFUL” (classification 0 or 1)
  + What variable(s) are the features for your model?
    - The features are, “APPLICATION\_TYPE”, “AFFILIATION”, “CLASSIFICATION” , “USE\_CASE”, “ORGANIZATION”, “STATUS”, “INCOME\_AMT”, “SPECIAL\_CONSIDERATIONS”, “ASK\_AMT”. These dependencies will help determine if an applicant is successful or not.
  + What variable(s) should be removed from the input data because they are neither targets nor features?
    - The variables that were removed were the “EIN” and “NAME” because they contribute any meaningful contribution to the model.
* **Compiling, Training, and Evaluating the Model**
  + How many neurons, layers, and activation functions did you select for your neural network model, and why?
    - In each model, I either used 1-2 different neurons, 1-2 layers, and at least 3 different activation functions. I did this to see if changing up the neurons, layers or activation could help yield a performance score of 75%.
  + Were you able to achieve the target model performance?
    - No, I was not able to achieve my target model performance. The highest performance each model yield of roughly 72%.
  + What steps did you take in your attempts to increase model performance?
    - I used different machine learning models to try to achieve my target performance.

**Summary:**

Though deep learning is beneficial in many ways, machine learning may be the way to achieve the targeted goal. By using different machine learning tactics such as Decision Trees or Random Forest could be models that can help achieve a higher accuracy score.

In the future, using more datasets, alternative algorithms, or different machine learning models could help yield higher accuracy scores.