**Write a Report on the Neural Network Model**

For this part of the assignment, you’ll write a report on the performance of the deep learning model you created for Alphabet Soup.

The report should contain the following:

1. **Overview** of the analysis: Explain the purpose of this analysis.

In this homework, the fictional nonprofit foundation Alphabet Soup wanted a tool that can help it select the applicants for funding with the best chance of success in their ventures. Through coding, I created a binary classifier that can predict whether applicants will be successful if funded by Alphabet Soup.

1. **Results**: Using bulleted lists and images to support your answers, address the following questions:

* Data Preprocessing
  + What variable(s) are the target(s) for your model? If the applicant was successful (“IS\_SUCCESSFUL” is 1)
  + What variable(s) are the features for your model? APPLICATION\_TYPE, AFFILIATION, CLASSIFICATION, USE\_CASE, ORGANIZATION, STATUS, INCOME\_AMT, SPECIAL\_CONSIDERATIONS, and ASK\_AMT.
  + What variable(s) should be removed from the input data because they are neither targets nor features? We had dropped EIN and Name
* Compiling, Training, and Evaluating the Model
  + How many neurons, layers, and activation functions did you select for your neural network model, and why? Neural Network was applied on each model twice. I played around with many combinations, but ultimately I selected these numbers for a balance of time to run the program and accuracy.
  + Were you able to achieve the target model performance? Not really. I was just under 75% accuracy at 73.2% which is just under ¾ accuracy.
  + What steps did you take in your attempts to increase model performance? The first time I ran the model without EIN and Name, I got:
    - loss: 0.5510
    - accuracy: 0.7328
    - 481ms/epoch - 2ms/step
    - Loss: 0.5510419607162476
    - Accuracy: 0.7328279614448547

In the second time, I lowered the threshold of what to cutoff so it would include more entries, only dropped “EIN”, and I increased the hidden layers to 5 and increased the nodes to 20/40/60/80/100. This Increased total params to 393,761. It was so large, Visual Basic kept freezing, but after 15 epochs, accuracy was about 78%.

**Summary**: Summarize the overall results of the deep learning model. Include a recommendation for how a different model could solve this classification problem, and then explain your recommendation.

Overall, the model gave a good but not great accuracy for the data. We probably could have tried a different type of model like logistic regression. I imagine because we had to do quite a bit of filtering for the data, this is not a great fit for all of the data.