# Overview of the analysis

For this analysis we are creating a tool for Alphabet Soup, a non-profit organization that funds startups. They want a tool to better be able to select applicants that are more likely to be successful. From Alphabet Soup’s business team, I received a CSV containing more than 34,000 organizations that have received funding from Alphabet Soup over the years. I then used the data to create a deep learning model with the following structure and results.

# Results

## Data Preprocessing

What variable(s) are the target(s) for your model?

* The ‘IS\_SUCCESSFUL’ variable is the target for my model.

What variable(s) are the features for your model?

* For the first model, all variables were the features for the model other than ‘Name’, ‘EIN’, and the target, ‘IS\_SUCCESSFUL’
* For future models, I tested removing ‘Use\_Case’, ‘Application\_Type’, and ‘Special\_Considerations’ from the features list, however it did not lead to a more accurate model.

What variable(s) should be removed from the input data because they are neither targets nor features?

* Even with the failure to improve accuracy, I feel ‘Special\_Considerations’ and ‘Application\_Type’ are neither features nor targets. ‘Name’ and ‘EIN’ should be removed as they add no value 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?

* On the initial model, I used the input layer, a 80 node hidden layer with relu activation, a 30 node hidden layer with relu activation, and the output layer.
* I selected this as the starting point due to the immense number of input variables (43) and large dataset size.

Were you able to achieve the target model’s performance?

* I was not, I hit a snag at ~53.2% accuracy on each model.

What steps did you take in your attempts to increase model performance?

* I made adjustments to the data included in the features list, the total number of hidden layers and nodes per layer, the activation types of the hidden layers, and the total number of epochs.

Summary

Overall, my final model ended with scores of: Loss: 0.6960, Accuracy: 0.5327. While the training loss is reasonable, the accuracy is bad. Slightly more accurate than a coin flip. The error likely lies in the preprocessing of the data before the model ran, however on my adjustments and checking of the data I could find no obvious issues.