1. **Overview** – This project set out to determine which future Alphabet Soup charity projects would have the best chance of success based off historical data from Alphabet Soup’s previous charity projects.
2. **Results:**
   1. **Target Variables** – The dataset included a column which indicated whether the charitable project was a success or not (1 for success and 0 for failure). This is the target variable, that we want our model to be able to predict.
   2. **Feature Variables** – The dataset included many feature variables which we wanted our model to learn from so that it could predict success of failure. These variables included Income $, Application Type, Affiliation, Use Case, Organization Type, Status, Special Considerations, and Ask Amount $.
   3. **Removed Variables** – Also included in the dataset were 2 variables that would have no impact on the model, or in the case of the EIN have a negative impact. The first was the name variable, each name of the project is unique and therefore would have no impact on the model. The second variable, the EIN, which is a series of numbers used to identify the project could have been incorrectly interpreted by the model as having significance because it was a number that could be calculated, even though the number was essentially meaningless. Therefore, it had to be removed.
   4. **Model / Optimization** - I started out with 8 neurons in the first layer and 5 in second layer and using Relu in the first and second hidden layer and sigmoid as the output layer. Using 100 epochs I initially got an accuracy score of 73%. I tried various iterations of the model (upwards of 10) reducing the number of value counts for binning, increasing the number of neurons in each layer, changing the activation functions in the hidden layers but was never able to get passed the 73% accuracy score.
   5. **Summary** – Being able to predict the success of a charitable project with 70%+ accuracy is fairly good. It is not evidently clear that a machine learning model can accurately predict the success of a charitable project to a much higher percentage than 70%. There are many existential factors that can impact the success of a charitable project that were not included as variables in the dataset. For example, the charitable project itself, there is no metric that can denote what the project actually is, that is a qualitative variable not quantitative. Or, the status of the economy, which is a factor that should be considered when evaluating the success or failure of a financial project. Moreover, the dataset does not explicitly state what actually constitutes success or failure, if we understood that we can add or remove variables to help the model focus on those what makes a charitable project successful.