**Overview**

The purpose of this analysis is to develop a **binary classification model** that helps **Alphabet Soup** determine **which applicants have the highest chance of success** if funded. By leveraging machine learning, specifically **deep neural networks (DNNs)**, the goal is to **improve decision-making and funding efficiency**

**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?**

- IS\_SUCCESSFUL: Represents whether an applicant succeeded in their venture (1 = successful, 0 = unsuccessful).

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

- APPLICATION\_TYPE, AFFILIATION, CLASSIFICATION, USE\_CASE, ORGANIZATION, ASK\_AMT, INCOME\_AMT

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

EIN and NAME: These do not contribute to predicting success

**Compiling, Training, and Evaluating the Model**

**How many neurons, layers, and activation functions did you select for your neural network model, and why?**

1st Layer: 32 Neurons

2nd Layer: 16 Neurons

Functions: LeakyRelu, Sigmoid

**Were you able to achieve the target model performance?** No

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

I dropped increased and decreased both with the epoch and batch sizes. I tried different functions and dropped columns I didn’t’ think was needed in my dataset.

**Summary**: The deep learning model provides valuable insights but requires additional refinement to achieve higher predictive accurac**y**. Given the structured nature of the dataset, alternative models may perform better, such as **XGBoost** or **Deep Forest** given the dataset's characteristics. Further tuning of DNN hyperparameters is also necessary to improve performance and avoid overfitting.