Deep Learning Analysis

Overview: The purpose of this analysis is to initiate a learning model that is capable of predicting successful applicants who received funding from Alphabet Soup, a nonprofit foundation. By leveraging the dataset, machine learning techniques were used to create a binary classifier that identifies organizations with the best chance of success. The goal of this challenge was to use these techniques to achieve accuracy of 75% or higher.

Results:

Data Processing

- The variable 'IS_SUCCESSFUL' is considered the target of this model.
- Featured variables include:
    - APPLICATION_TYPE
    - AFFILIATION
    - CLASSIFICATION
    - USE_CASE
    - ORGANIZATION
    - STATUS
    - INCOME_AMT
    - SPECIAL_CONSIDERATIONS
    - ASK_AMT
- The variables that are removed from the input data are EIN and NAME. These are removed because they are neither targets nor features.

Compiling, Training, and Evaluating the Model

- First attempt used 2 layers. The target model performance did not reach a 75% accuracy (72.6%).
- Second attempt used 3 layers and 2 more variables were removed (AFFILIATION & SPECIAL_CONSIDERATIONS). The target model performance did not reach a 75% accuracy (66%).
- Third attempt used 3 layers and the previous variables were brought back. The epochs were increased to 150. The target model performance did not reach a 75% accuracy (72.6%).
- The final attempt used the same parameters as the third attempt with 250 ephochs. The target model performance did not reach a 75% accuracy (72.5%).

Summary: In all 3 attempts the model failed to reach a target model performance of 75%. Using a different classification model, such as multi-class or random forest, may be of better use to reach the preferred accuracy.