Deep Learning Challenge: Charity Funding Predictor

**Overview:**

Alphabet Soup, a non-profit foundation, aims to develop an algorithm capable of forecasting the likelihood of success for funding applicants. Leveraging expertise in machine learning and neural networks, our task is to utilize the features within the given dataset to construct a binary classifier. This classifier should be able to predict the success of applicants funded by Alphabet Soup.

**Results:**

Initiating the data processing, we eliminated irrelevant information and excluded EIN and NAME. The remaining columns were designated as features for the model. NAME was reintroduced in the second test for binning purposes. Subsequently, the data was divided into training and testing sets. The target variable, labeled "IS\_SUCCESSFUL," was assigned values of 1 for yes and 0 for no. The APPLICATION data underwent analysis, and the "CLASSIFICATION" value was utilized for binning. To group "rare" variables, a cutoff using several data points was applied, assigning the new value "Other" for each unique value. Following successful binning verification, categorical variables were encoded using get\_dummies().

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

Each model, post-application of Neural Networks, comprised a total of three layers. The quantity of hidden nodes was determined by the number of features.

A screen shot of a computer code

Description automatically generated

A three-layer training model generated 532 parameters. However, the initial attempt resulted in an accuracy of only 52.34%, falling significantly short of the targeted 75%.

**Optimization:**

The second attempt with the “NAME” column in the dataset, achieved an accuracy of almost 74%.

A screenshot of a computer program

Description automatically generated

**Summary:**

Utilizing multiple layers is essential for deep learning models as they acquire the ability to predict and classify information by systematically filtering inputs through various layers of computation.A screen shot of a computer

Description automatically generated