Overview

The goal of this project is to create an algorithm using machine learning and neural networks to predict whether applicants will be successful if funded by the fictional non-profit foundation, Alphabet Soup.

Process

I was given a CSV file that I read into Pandas. This file contained more than 34,000 organizations that have received funding from the fictional foundation along with several columns of metadata about each organization.

The data was processed by:

-dropping non-beneficial columns,  
 -finding the number of data points for each unique value for each of the  
 columns that had more than 10 unique values - APPLICATION\_TYPE and CLASSIFICATION.  
 -choosing a cutoff point of 600 and 300, respectively, to bin rare  
 categorical values together into a new value called "Other",  
 -using `pd.get\_dummies()` to convert categorical data to numeric, dividing the data into a target array (IS\_SUCCESSFUL) and features arrays,  
 -applying the `train\_test\_split` to create a testing and a training dataset,  
 -and finally, using `StandardScaler` to scale the training and testing sets.

The resulting data included 44 features. The target variable (y) was IS\_SUCCESSFUL. The data was split into training and test subsets.

COMPILING, TRAINING, AND EVALUATING THE MODEL  
The model was required to achieve a target predictive accuracy higher than 75%... Results from the model attempt are detailed below:

This model resulted in an **accuracy score of 72.8%.** This means that 72.8% of the model’s predicted values align with the dataset’s true values.

The hyperparameters used were:

* layers = 2  
     
  o layer1 = 9 neurons and ‘relu’ activation function  
  o layer2 = 18 neurons and ‘relu’ activation function
* epochs = 100

Summary  
   
The model was unable to achieve a target predictive accuracy of 75%. I would consider using another classification model to see if it is better at predicting whether applicants will be successful if funded.