Deeping Learning Project :
Charity Funding Predictor Analysis Report

Overview:

The non-profit foundation Alphabet Soup wants to create an algorithm to predict whether or not applicants for funding will be successful. The goal is to create a binary classifier using machine learning and neural networks that is capable of predicting whether applicants will be successful if funded by Alphabet Soup.

Data Processing:

The Alphabet Soup's business team has received a CSV containing more than 34,000 organization that have received funding from Alphabet Soup over the years. Within this dataset are a number of columns that capture metadata about each organization.

In the initial model built:
Target variables considered : IS_SUCCESSFUL
The features considered : AFFILIATION, USE_CASE, ORGANIZATION, STATUS, INCOME_AMT, SPECIAL_CONSIDERATIONS, ASK_AMT
Variables Neither targets nor features removed from the input data: EIN, NAME, and CLASSIFICATION and APPLICATION_TYPE are replaced with 'Other'

The dataset is split into training and testing datasets. CLASSIFICATION was used for binning after data analysis. Each unique count used as a cutoff point to bin "rare" categorical variables together in a new value 'Other'. Then checked to see if binding was successful. Then used pd.get_dummies() to encode categorical variables.

Compiling, Training, and Evaluating the Model:

Defined the deep learning Neural Network model with the number of input features (7) and hidden nodes for each layer. The number of hidden nodes for each layer decided based on number of features. 2 layers were selected for initial model built.

The 2 layer model generated 477 Total and Trainable params. Initial attempt is able to achieve model performance only 72% which is under the desired 75% target model performance.

Optimization :

In the 2nd Optimization attend, added additional feature ‘NAME’ back into the dataset. This helped to achieve 77% which is 2% higher than target performance model. This model generated 3,298 total params.