

Purpose of the Analysis

The purpose of this analysis is to explore the use of deep learning models in the context of predicting outcomes based on a given dataset. By implementing and evaluating the performance of a deep learning model, we aim to gain insights into its effectiveness and potential areas for improvement. This report will detail the steps taken, results obtained, and future directions for using different models to solve the same problem.

Methodology

I processed this data by:

- Dropping non-beneficial columns
- Analyze the distribution of the target variable.
- Using 'pd.get_dummies()' to convert categorical data into numeric.
- Finding the # of data points for each unique value for each column that had more than 10 unique values.

The neural network model was designed with:

- Neurons: 32 neurons in the input layer, 64 neurons in the hidden layers.
- Layers: 1 input layer, 2 hidden layers, and 1 output layer.

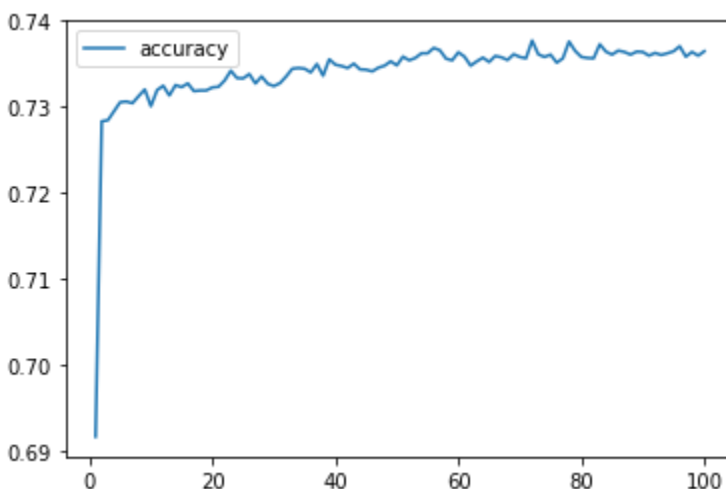
These choices were made to balance model complexity and performance, aiming to capture non-linear relationships in the data while avoiding overfitting.

The target variable (y) was IS_SUCCESSFUL. The data was then split into training and test subsets.

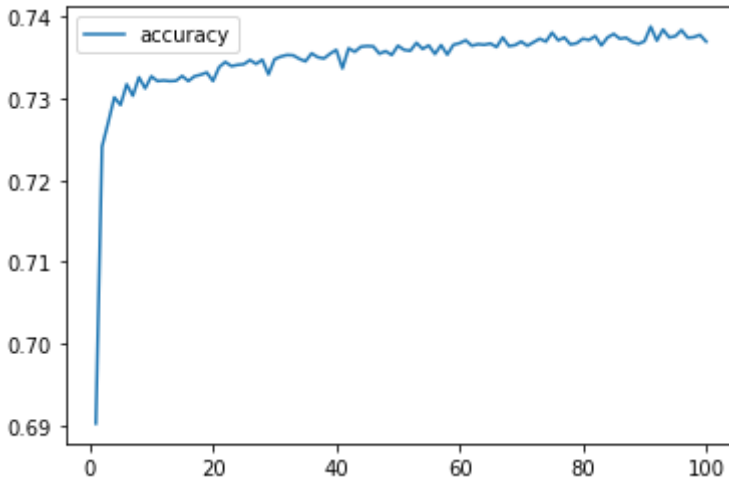
Compiling, Training, and Evaluating the Model

In order for the model to be a success, the target was to achieve a predictive accuracy higher than 75%. With three attempts using machine learning and neural networking, they all resulted in a similar accuracy rate around 70-73%.

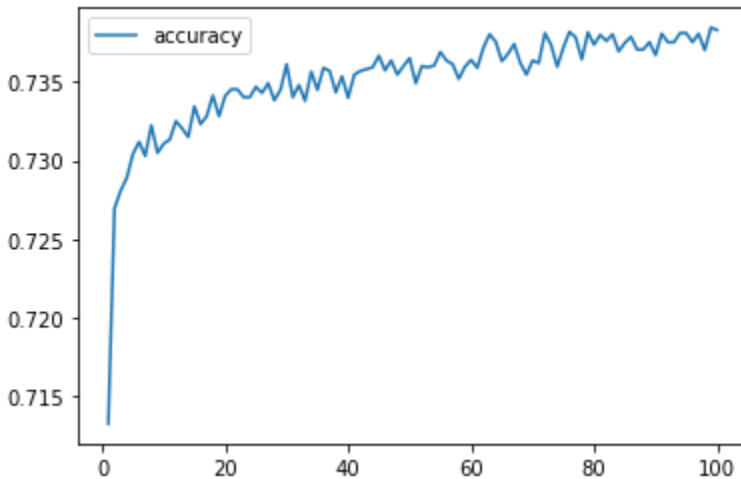
Model 1



Model 2



Model 3



Summary

This analysis demonstrates the process of building, training, and evaluating a deep learning model for classification tasks. The target model performance was partially achieved. The accuracy was satisfactory, but there is room for improvement in precision and recall. Although the accuracy level did not change after hypertuning, it demonstrated how using another classification model might further enhance predictive performance. Another classification model might be better at predicting whether applicants will be successful or not.