**Neural Network Model Report:**

1. **Overview:**

The purpose of this analysis is to use neural network machine learning techniques to create a model with the best loss and accuracy rate.

1. **Results:**

**Data Preprocessing:**

* Target Variable: IS\_SUCCESSFUL
* Feature Variables: STATUS, ASK\_AMT, APPLICATION\_TYPE, AFFILIATION, CLASSIFICATION, USE\_CASE, ORGANIZATION, INCOME\_AMT, SPECIAL\_CONSIDERATIONS
* Variables that were removed during the optimization process:
  + EIN
  + NAME
  + STATUS
  + SPECIAL\_CONSIDERATIONS
  + ASK\_AMT

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

* Two hidden layers were used, and each had the “relu” activation function. The first layer contained 8 nodes and the second layer contained 5. The output layer contained 1 node and the “sigmoid” function.
* After testing this model, a loss rate of 0.5543 and an accuracy rate of 0.7258 was the result.
* The following images show a glimpse of the optimization process.

A screenshot of a computer program

Description automatically generatedA screenshot of a computer code

Description automatically generated

A screenshot of a computer program

Description automatically generated

1. **Summary:**

After four attempts, the third one contained the best results with a loss rate of 0.553 and accuracy rate of 0.7286.

I would recommend that an unsupervised learning model be used for this analysis using the PCA method for with these results can be grouped into only two clusters.