Report
Charity Funding Predictor

- **Overview**

  The project is to create a binary classifier that can predict the likelihood of success of applicants for funding by the nonprofit foundation, Alphabet Soup. The goal is to use machine learning and neural networks to analyze a provided dataset, identifying the key features that are most predictive of success. The result should be a tool that Alphabet Soup can use to select the most promising applicants for funding and increase the success rate of their ventures.

- **Results**

  - Data Preprocessing
    1. What variable(s) are the target(s) for your model?
       Target variable: IS_SUCCESSFUL --> 1(successful) and 0(not successful)

    2. What variable(s) are the features for your model?
       Feature variables: Both classification and Application Type.

    3. What variable(s) should be removed from the input data because they are neither targets nor features?
       Unnecessary columns including EIN and NAME.

  - Compiling, Training, and Evaluating the Model
    1. First try:
       The hyperparameters used were:
       layers = 2
       o layer1 = 7 neurons and 'relu' activation function
       o layer2 = 14 neurons and 'relu' activation function
       epochs = 100
       Accuracy: 0.7251312136650085
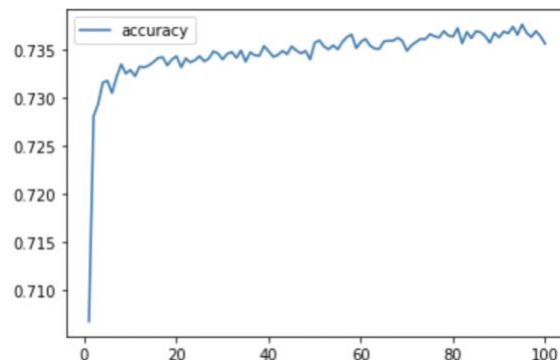
2. Second try
   The hyperparameters used were:
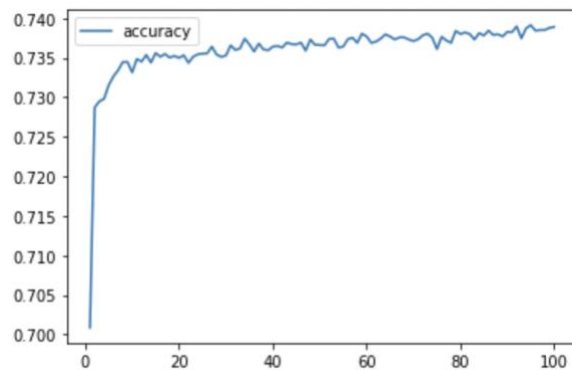   layers = 3
   o layer1 = 7 neurons and 'relu' activation function
   o layer2 = 14 neurons and 'relu' activation function
   o layer3 = 27 neurons and 'relu' activation function
   epochs = 100
   Accuracy: 0.7244315147399902
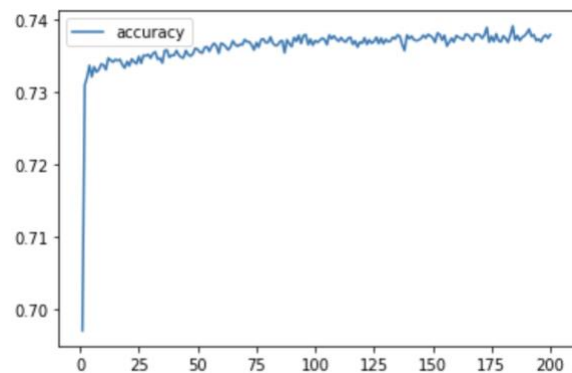

3. Third try
   layers = 3
   o layer1 = 7 neurons and 'relu' activation function
   o layer2 = 14 neurons and 'relu' activation function
   o layer3 = 27 neurons and 'relu' activation function
   epochs = 200
   Accuracy: 0.7251312136650085

- **Summary**

Despite three attempts, the model's maximum predictive accuracy was 72.8%, and hyperparameter tuning did not lead to any noteworthy improvement. Therefore, it might be worthwhile to consider exploring alternative classification models to improve accuracy in future optimization efforts.