# Write Up: Module 21 Challenge

## Purpose of the Analysis

The purpose of this analysis was to build a machine learning model capable of predicting whether a given funding applicant would be successful if granted that funding by the Alphabet Soup.

## Model Design

The optimized version of the machine learning model was a neural network comprised of five layers, each consisting of 16 neurons and using a relu activation function, plus an output layer with a sigmoid activation function, as the goal is to predict whether a funding applicant is successful (value = 1) or unsuccessful (value = 0).

Parameters for the optimized version of our machine learning model included:

* Alphabet Soup application type
* Government organization classification
* Use case for funding
* Active status
* Income classification
* Special considerations for application

## Summary of Model Results

The optimized model had a loss rate of 56% and was able to predict whether an applicant for funding from the foundation would be successful with 73% accuracy.

## Alternative Models to Use

Alternative models that we could use to predict whether a given applicant would be successful based on the multitude of other fields in the dataset include principal component analysis or a logistic regression model, which would act as a binary classifier yielding binary predictions of an applicant’s likelihood of success (0 = not successful, 1 = successful). We could also try changing the activation functions of the various layers in the model.