FIN 599R, Spring 2024

Assignment 1: Due at 3:45 pm on 2-15-2024 **Total Points = 10**

Upload the .ipynb files that you use to answer the questions, including the outputs.

1. (7 points) You are an analyst at a bank and your task is to improve their failure prediction model. Your assignment is to add two features to the model in "L02_Failure_prob.ipynb."

    1.1. Suggest two features to add to the model. Intuitively explain why you expect these features to be helpful in predicting default, and the sign of the relation between these features are probability of default. **Note:** These two features should be new and should not be among the features in "L02_Failure_prob.ipynb."

    1.2. Present univariate comparisons of these features for classes "0" and "1" in the data used in "L02_Failure_prob.ipynb."

    1.3. Fit the logit model to predict bankruptcy with the two new features in Q1.1 **plus** any three features used in "L02_Failure_prob.ipynb." What is the auc for the model?

    1.4. The "sklearn" library uses a threshold of 0.50 for classification. Would recommend a classification threshold of 0.01 rather than the default threshold of 0.50? Compute the following metrics for the classification thresholds of 0.50 and 0.01: (a) Accuracy, (b) Recall and (c) Precision and justify your recommendation.

2. (3 points)

    2.1. Compute the Dow Jones Industrial Average as of close on the last day for which you are able to download the data.

    2.2. Suppose Dow Jones removes INTC from the index and replaces it with META after close on the last day. Compute the divisor after this index reconstitution.