

# Company Bankruptcy Prediction

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Analytics

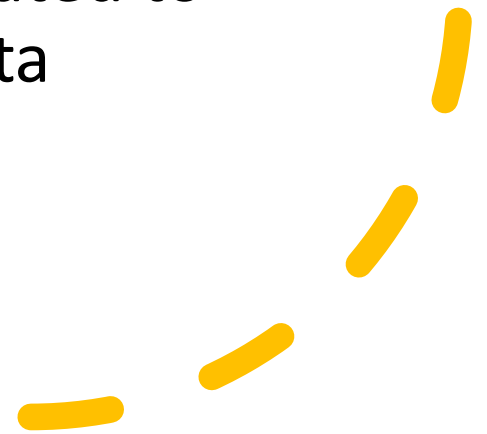


# Introduction

- With Recession around the corner and more layoffs in the market. I was researching on what metrics the companies/organizations go bankrupt.
- Good bankruptcy prediction is important for any financial institution to make lending decisions to firms. Some of the co-corporate terminologies which will help identify bankruptcy predictions are **Net Income to Total Assets, Interest Coverage Ratio, Cash Flow to Liability, Retained Earnings to Total Assets, Total Asset Growth Rate, and Operating Profit Rate.**
- The most important questions I wanted to answer are **“Relationship between Bankruptcy event and Net income to total assets”**
- **“Relationship between Bankruptcy event to Total Assets,” “Relationship between Bankruptcy event to Total Assets Growth Rate”**

# Data Set and Preparation

- Data set source selection:  
<https://www.kaggle.com/code/jiunkailee/company-bankruptcy-prediction-dt-rf-knn-nn/data>
- Preparing the Data: remove NA values and selecting important variables related to bankruptcy from the original data



# Models used for Evaluation



Random Forest, Decision Tree Classifier and K Neighbors Classifier to check on Test and Train data sets.



Random Forest has accuracy of 6



Decision Tree has test accuracy of 67%



K Neighbors has the most accurate prediction with accuracy of test set reaching 75% so I will be proceeding with K Neighbors for Deployment



# Results Analysis

- Net Income to Total Assets growth will decrease bankruptcy chance
- Retained earnings to Total Assets will decrease bankruptcy chance
- After Tax net interest rate has direct impact on bankruptcy event.
- There is no straightforward relationship between Bankrupt and Total Assets growth rate
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# Reference Links



- <https://www.sciencedirect.com/science/article/abs/pii/S0377221716000412>
- Kaggle Data Sources:
- <https://www.kaggle.com/code/jiunkailee/company-bankruptcy-prediction-dt-rf-knn-nn/data>
- Additional Data Source:
- <https://www.kaggle.com/code/edacebeci/predict-bankruptcy/data>
- <https://scholarworks.lib.csusb.edu/cgi/viewcontent.cgi?article=5256&context=etd-project>