Rakamin Academy

id/x partners

2023

# VIRTUAL INTERNSHIP EXPERIENCE

## ID/X PARTNERS

**Hosted By:**

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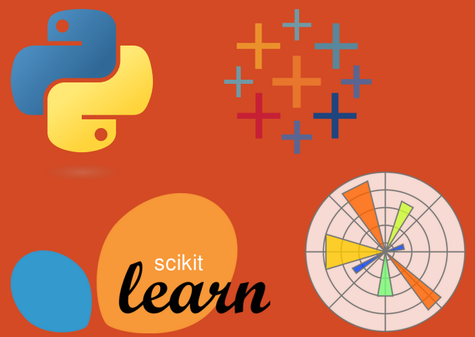
SHORT BRIEF

# Business Understanding

- Credit risk is known as the risk of borrower's failure to repay a loan
- Assessing borrower's risk to repay the loan is a crucial thing in credit risk assessment
- We can use machine learning to automate the process

## Tools:




# Analytical Approach

- Descriptive analysis
- Graph analysis
- Predictive modelling (classification)

SHORT BRIEF

# Data Requirements & Collection

- I required a dataset of customer loan from financial company
- The dataset is collected by ID/X Partners from a company

# Data Understanding

- This dataset has 74 columns / features
- Consists of 52 numerical & 22 non-numerical features
- Many features have missing values
- There are 17 null features

## Data Preparation

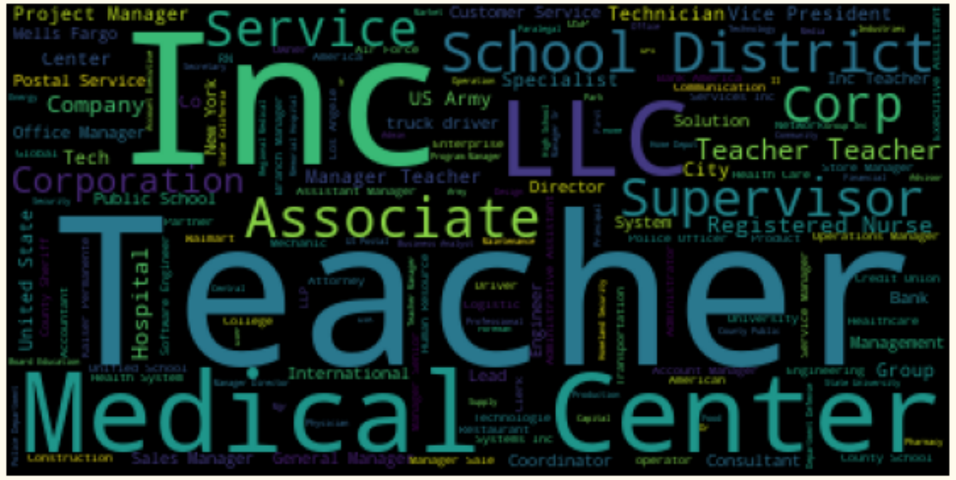
**Missing Value**: Removing and Imputing Feature
**Engineering**: Categorical Encoding, Log Transform, Standardization
**Feature Selection** using Correlation Analysis
**Removing outliers** using IQR Method

# What are the employee titles of our borrowers?


## Exploratory Data Analysis

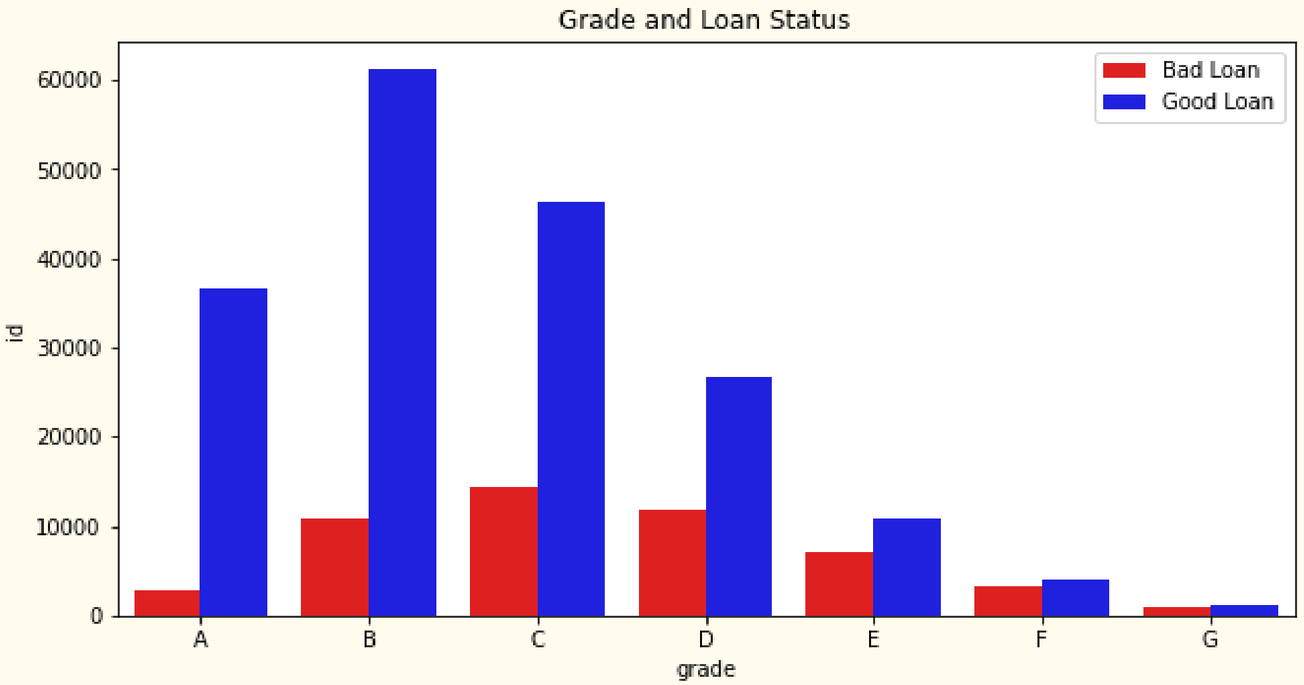
**Good Loan (1)** : Fully Paid, Does not meet the credit policy. Status:Fully Paid

B**ad Loan (0)** : Charged Off, Does not meet the credit policy. Status:Charged Off, Default, Late (31-120 days)

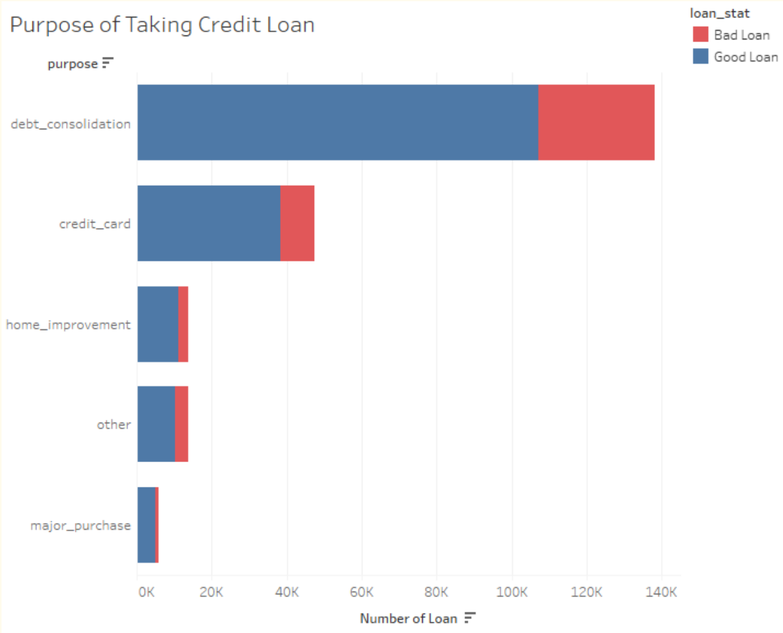


# Visualization

## How about classifying grade towards our borrower and the loan status?



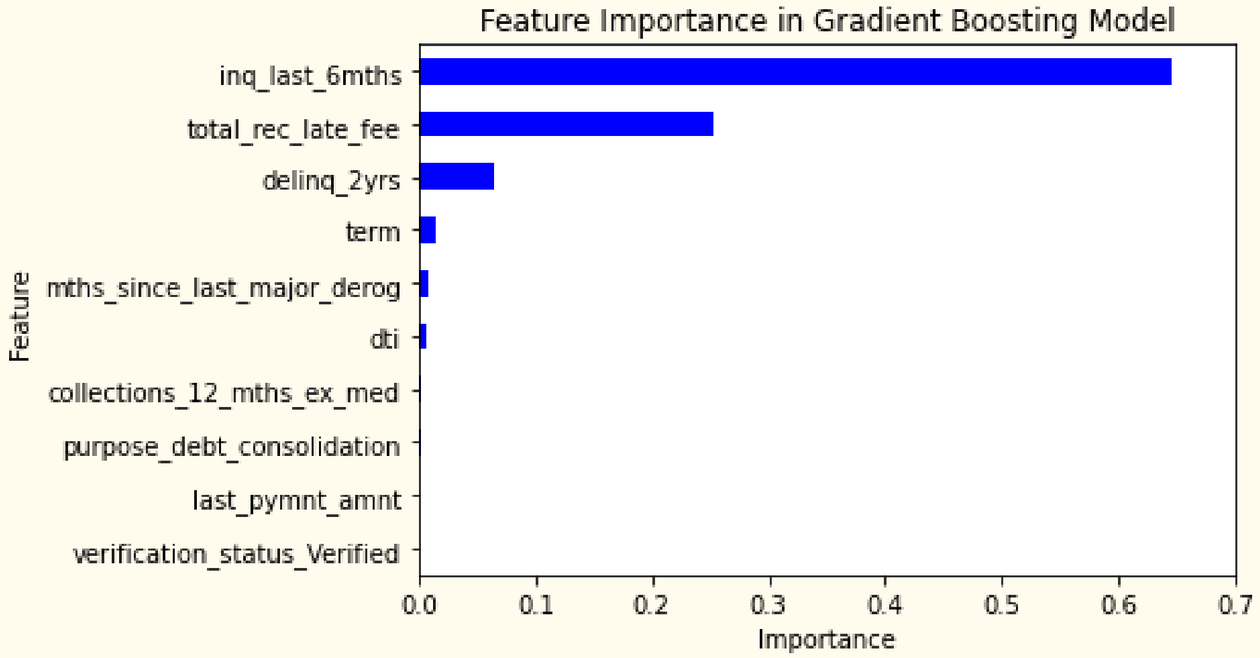

## Why do our borrower take credit loan?



# Modelling & Evaluation

*70% Training & 30% Testing*

- *I used SMOTE for handling imbalanced class*
- *All steps are handled by Pipeline*




**Evaluation Metrics:**

- Main: False Negative (FN) & Recall from “0” (I minimized wrong predicted bad loan)
- Additional: ROC-AUC & KolmogorovSmirnov (KS)

# Selected model: Gradient Boosting Trees

| Model | FN | Recall | ROC-AUC | KS |
|---|---|---|---|---|
| Random Forest | 608 | 96% | 99.41% | 94.40% |
| Gradient Boosting Trees | 386 | 97% | 99.48% | 94.28% |
| XGBoost | 447 | 97% | 99.43% | 93.83% |
| Voting Classifier | 420 | 97% | 99.48% | 94.34% |