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CREDIT CARD DEFAULT PREDICTION

High Level Design

Debanjan Chakraborty
INEURON INTERSHIP

1.INTRODUCTION

In scenarios where seemingly manageable debts, such as credit cards, spiral out of control due to factors like job loss, medical crises, or business failure, predicting and preventing customer default becomes crucial. Credit card debts often escalate rapidly in such situations, driven by hefty finance charges (compounded on daily balances) and additional penalties. Many individuals can relate to this scenario, having missed credit card payments occasionally due to forgotten due dates or cash flow issues. However, when this pattern persists for months, the question arises: how can we predict if a customer will default in the coming months?

To mitigate the risk for banks, a predictive model has been developed. This model leverages demographic data such as gender, age, marital status, and behavioral data including last payments and past transactions. By analyzing this information, the model aims to forecast the likelihood of a customer becoming a defaulter. This proactive approach assists banks in managing and minimizing the risks associated with potential credit card delinquencies.

2.PROBLEM STATEMENT

The financial industry's remarkable advancement is accompanied by emerging trends in financial threats, particularly in assessing credit risk for commercial banks. One of the primary challenges faced by these banks is predicting the risk of credit default among their clients. The objective is to forecast the likelihood of credit default by analyzing the characteristics of credit card owners and their payment histories. This predictive modeling aims to enhance the banks' ability to anticipate and manage credit risks effectively.

3.DATASET INFORMATION

ID: ID of each client

LIMIT_BAL: Amount of given credit in NT dollars (includes individual and

family/supplementary = credit)

SEX: Gender (1=male, 2=female)

EDUCATION: (1=graduate school, 2=university, 3=high school, 4=others,

5=unknown, 6=unknown)

MARRIAGE: Marital status (1=married, 2=single, 3=others)

AGE: Age in years

PAY_0: Repayment status in September, 2005 (-1=pay duly, 1=payment delay for

one month, 2=payment delay for two months, ... 8=payment delay for eight

months, 9=payment delay for nine months and above)

PAY_2: Repayment status in August, 2005 (scale same as above)

PAY_3: Repayment status in July, 2005 (scale same as above)

PAY_4: Repayment status in June, 2005 (scale same as above)

PAY_5: Repayment status in May, 2005 (scale same as above)

PAY_6: Repayment status in April, 2005 (scale same as above)

BILL_AMT1: Amount of bill statement in September, 2005 (NT dollar)

BILL_AMT2: Amount of bill statement in August, 2005 (NT dollar)

BILL_AMT3: Amount of bill statement in July, 2005 (NT dollar)

BILL_AMT4: Amount of bill statement in June, 2005 (NT dollar)

BILL_AMT5: Amount of bill statement in May, 2005 (NT dollar)

BILL_AMT6: Amount of bill statement in April, 2005 (NT dollar)

PAY_AMT1: Amount of previous payment in September, 2005 (NT dollar)

PAY_AMT2: Amount of previous payment in August, 2005 (NT dollar)

PAY_AMT3: Amount of previous payment in July, 2005 (NT dollar)

PAY_AMT4: Amount of previous payment in June, 2005 (NT dollar)

PAY_AMT5: Amount of previous payment in May, 2005 (NT dollar)

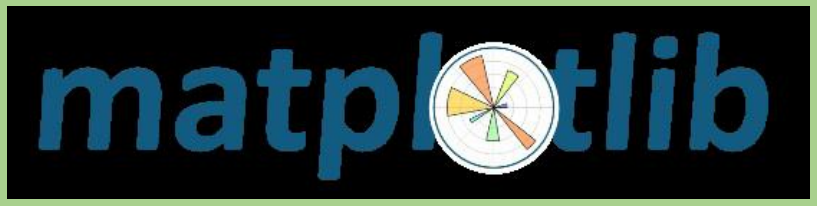
PAY_AMT6: Amount of previous payment in April, 2005 (NT dollar)

default.payment.next.month: Default payment (1=yes, 0=no)

4.TOOLS USED

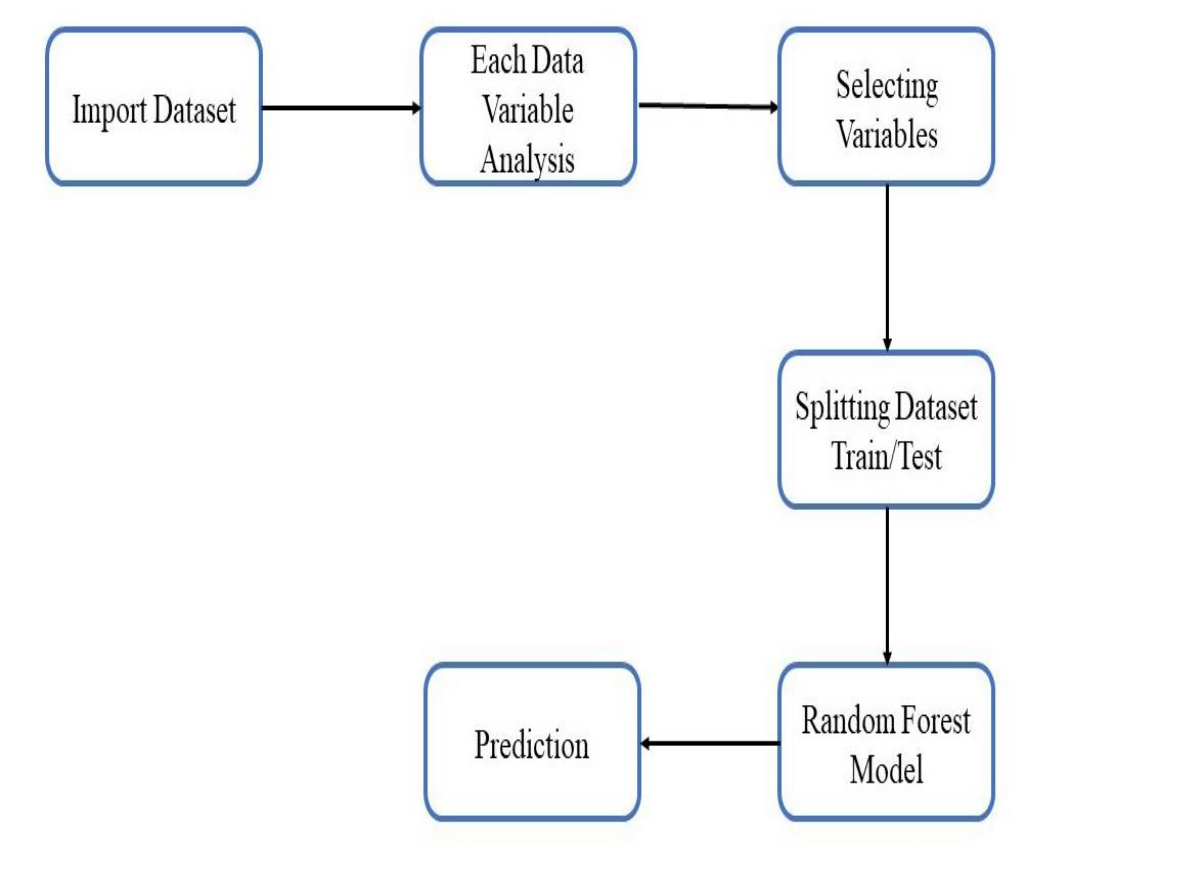
Python programming language and frameworks such as NumPy, Pandas, Scikit-learn,

Matplotlib, Seaborn are used to build the whole model.

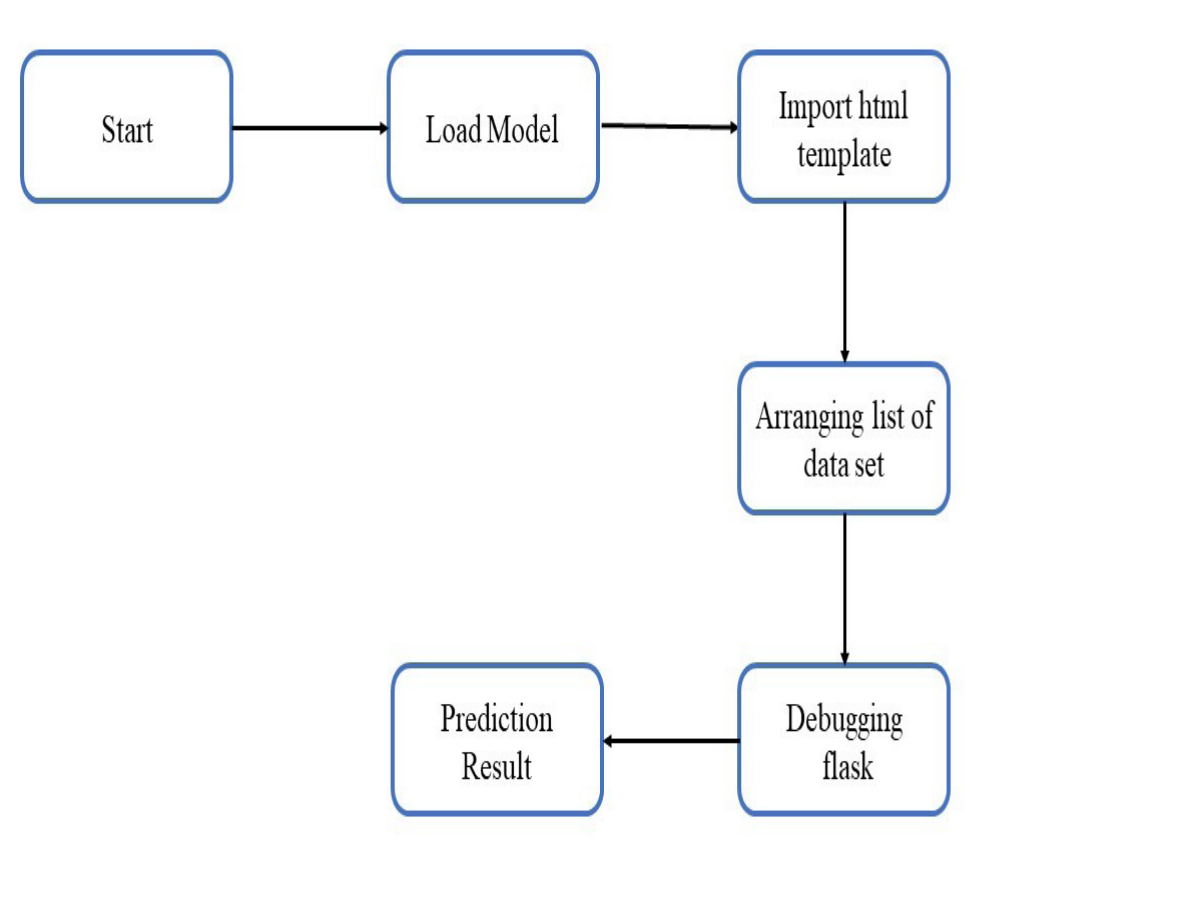


5.DESIGN DETAILS

5.1.Process flow



5.2.Deployment process



6.CONCLUSION

The project has been implemented using Flask, making it accessible to a wide audience. Its primary purpose is to aid banks and loan lenders in predicting whether customers are likely to default on credit card payments. The predictive model empowers the bank or relevant departments to take proactive measures based on the model's insights.

The user interface (UI) has been designed with a focus on user-friendliness, ensuring that users do not require extensive knowledge of tools. The intuitive design allows users to easily access and interpret the information provided by the model. This simplicity facilitates efficient decision-making processes for the bank or lending institutions, enabling them to take necessary actions promptly based on the predictions generated by the model.