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Prediction of Modernized Loan Approval System Based on Machine Learning Approach

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ABSTRACT: - In todays world, taking loans from financial institutions has become a very common phenomenon. Everyday a large number of people make application for loans, for a variety of purposes. But all these applicants are not reliable and everyone cannot be approved. Every year, we read about a number of cases where people do not repay bulk of the loan amount to the banks due to which they suffers huge losses. The risk associated with making a decision on loan approval is immense. So the idea of this project is to gather loan data from multiple data sources and use various machine learning algorithms on this data to extract important information. This model can be used by the organizations in making the right decision to approve or reject the loan request of the customers. In this paper, we examine a real bank credit data and conduct several machine learning algorithms on the data for that determine credit worthiness of customers in order to formulate bank risk automated system.

KEYWORDS: Machine learning, Data, Loan, Training, Testing, Prediction

I. INTRODUCTION

Prediction of modernized loan approval system based on machine learning approach is a loan approval system from where we can know whether the loan will passor not. In this system, we take some data from the user like his monthly income, marriage status,loan amount, loan duration, etc. Then the bank will decide according to its parameters whether theclient will get the loan or not. So there is a classification system, in this system, a training set isemployed to make the model and the classifier may classify the data items into their appropriateclass. A test dataset is created that trains the data and gives the appropriate result that, is the client potential and can repay the loan. Prediction of a modernized loan approval system is incredibly helpful for banks and also the clients. This system checks the candidate on his priority basis.Customer can submithis application directly tothe bank sothe bank willdo the whole process,nothird party or stockholder will interfere init. And finally, the bank will decide that the candidateis deserving ornot on its priority basis.

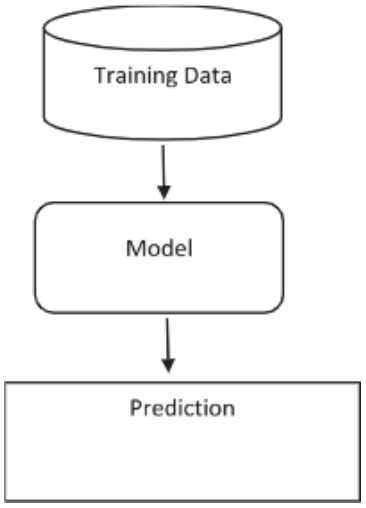

Fig.1.Basic Machine Learning Model

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II. METHODOLOGY

I. MACHINE LEARNING ALGORITHMS

In this we are using three Machine Learning algorithms which are used to find out the correct prediction of Data set.

a) **XGBoost –** XGBoost is a Decision tree based open source software library. It implements machine learning algorithms that uses a gradient boosting framework. It works on Linux, Windows, and macOS.

b) **Random Forest–** Random forests is a classification algorithm which builds big number of Decision tree, whose prediction is more accurate than any of individual decision tree.

c) **Decision Tree –** A Decision tree split the dataset into smaller parts. And then predict the every chances.

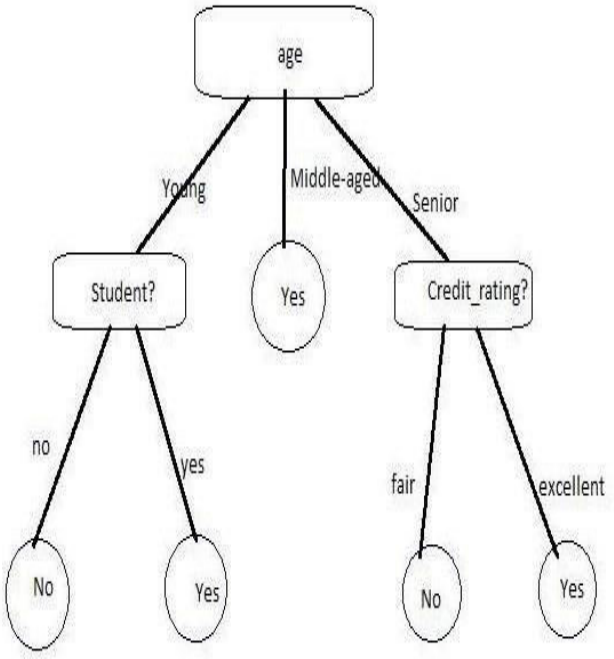

Fig.2.Decision Tree

There is a major problem that many people not able to back the loans to banks. And banks are going in losses.

Banks received many applications for loan approval day by day and not everyone gets approved. Most of the banks have their own credit score and risk assessment techniques so as to check that the loan is approved or not. Why this loan problem arises this question will get resolved in just a few minutes. The main reason to get a loan is to fulfill the needsofsomething.Forabusinessmanhe/shewantstoincreasethebusinessorif that company is at loss to get over from that he/she needs a loan. In middle-class people wants to fulfill their needs sotheywant a loan. So, the main thing of this to fulfill the needs of someone or for something

Again the question arises that what are the problems thatare forming in providing the loans.The answer to this question that not everybody can loan because if he/she is notable to returnthen who is providing the loan he/she or thecompany or the bank that is providing the loanwill get in the loss. So, first who is providing the loan they have to verify or set some criteriathat who is taking the loan is able to return or not. Like in banks like we have a credit cardfacility but not everybody gets a credit card. For that, a credit score is there to check whethereligible or not. For credit score one should have a good credit score then he/she be able to get aloan. Some criteria like a source of income should be there for getting a credit card. Banksprovide loans on behalf of one who is taking the loan he/she should provide some documents and verify. Like some company not able to provide the loans then banks get in loss and theycalleditNBFC's.

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During this project data processing algorithms are going to study loan-approved data mighthelp in predicting the like defaulters thereby helping the banks for creating better decisions within the future.

II. MODELING AND ANALYSIS

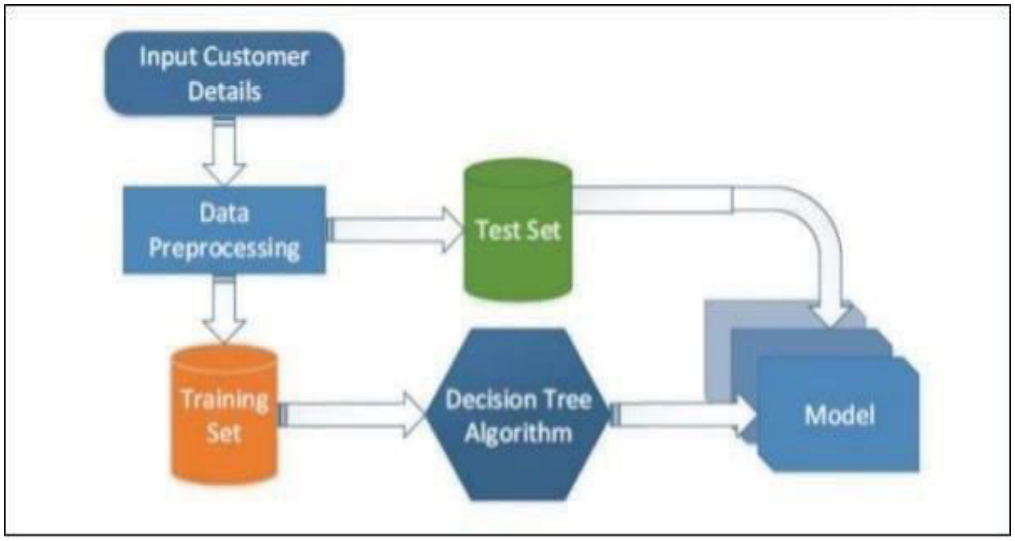

Fig.3.ArchitectureDiagram

Analysis:

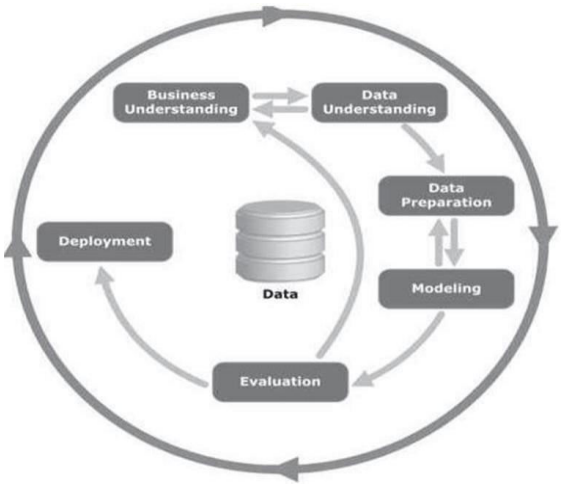

Fig.4.Process Diagram

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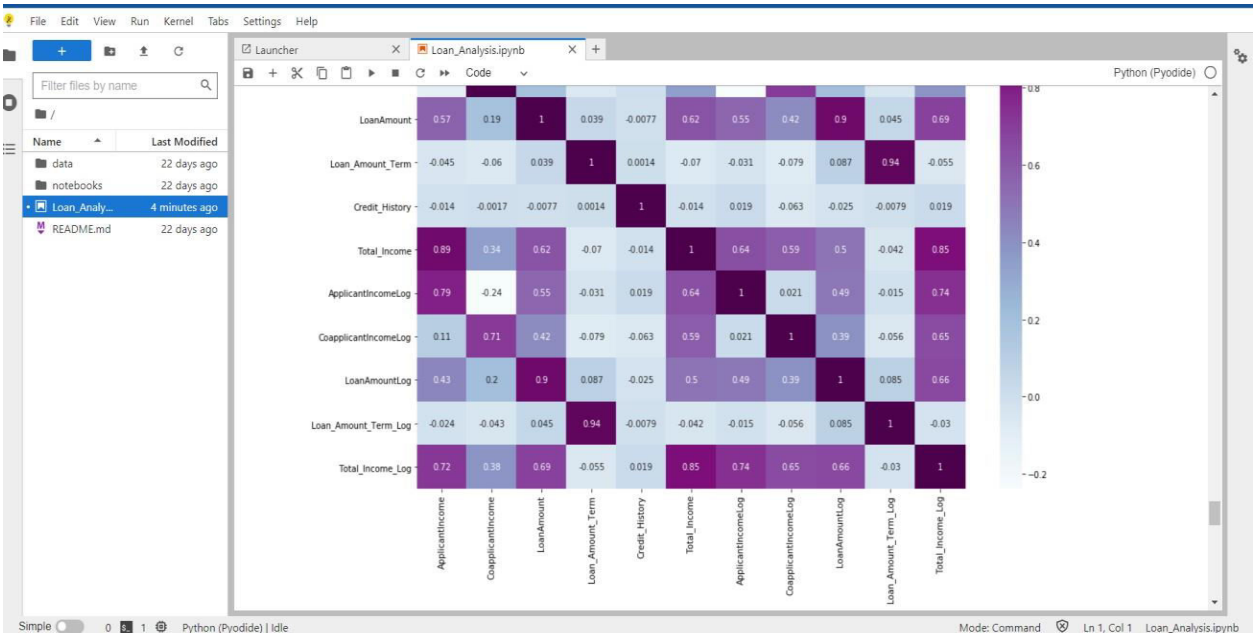
III. RESULTS



IV. CONCLUSION AND FUTUREWORK

According to this researchprediction accuracy is sweet for both datasets. In somesituations like client going through some disaster so here the algorithm cannot predictthe appropriate result. This research paper can find out the client is potential and repaythe loan and the accuracy isgood. loan duration, loan amount, age, income are themost important factors for finding out there (whether the client would have been). „zipcode“ and„ credit history“ are the fore most important factors for predicting the category of the loan Applicant.

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