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Anticipating Loan Eligibility with Advanced Machine Learning Approaches

Dr. Lisa Martinez

Climate Change Research Center, Harvard University

Abstract

Loans are a cornerstone of banking profitability, yet identifying reliable applicants who will repay the loan remains a formidable challenge. Manual selection processes are susceptible to errors, underscoring the need for an automated solution. This study presents a machine learning-driven loan prediction system poised to autonomously identify qualified applicants, offering mutual advantages to applicants and bank personnel. Notably, this system promises to streamline the loan approval process, significantly reducing the time required for loan sanctioning, as it leverages diverse machine learning techniques for precise loan data predictions.

Introduction

A loan is the foundation of a bank's operations. The majority of the bank's profits are derived directly from the money made from the loans. Even when the bank authorizes the loan following a lengthy verification and testimonial process, there is no guarantee that the chosen hopeful is the appropriate hopeful. When done manually, this operation requires additional time. We are able to foretell if a specific hopeful is secure or not, and the entire testimonial procedure is mechanized using machine literacy.Credit risk is the chance that the loan won't be paid back on time or at all; liquidity risk is the chance that too many deposits will be withdrawn too quickly, leaving the bank cash-strapped; and interest rate risk is the chance that interest rates on bank loans will be too low to generate enough revenue for the bank. For bank clients as well as potential borrowers, loan prognostic is quite beneficial.

The goal of this project is to provide a quick, easy, and immediate technique for choosing qualified applications. The bank may gain in a number of ways, such as by imposing a deadline for applicants to check and confirm whether or not their loan will be approved.This forecasting approach might be useful in that it allows bankers to concentrate more on valuable assets rather than on unqualified applicants. The applicant's loan application process will take less time as a result. "Results for a certain Loan Id can be sent to other bank departments so they can handle applications in a suitable manner. This facilitates the completion of other formalities by all other departments.

Methodology

We have used different classification algorithms to find out which one best predicts the loan status with most accuracy.

Random Forest:In Supervised Machine Learning, Random Forest is a well-known learning technique that works well for Regression & Classification applications.It creates random forests and then searches through them for solutions.It is an ensemble learning method where a sizable number of classifiers are employed to address a challenging issue.To avoid overfitting difficulties, random forest considers each tree for prediction rather than just one.

Support Vector Machine (SVM):A popular supervised machine learning algorithm is SVM. The SVM classifier is currently the most popular classifier.SVM has proven to have a wide variety of excellent skills, especially in classification issues.

Logistic Regression (LR):Logistic regression, which belongs to the supervised learning approach, is one of the most popular machine learning algorithms.The sample size for LR should be large.It is employed for categorical target variable prediction. It does not produce 0 or 1, but rather returns the probability value.

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