

Credit Risk Analysis Reports

Overview

The purpose of this analysis is to develop a machine learning model using logistics regression to assess credit risk for borrowers based on historical lending data. The model aims to accurately predict whether a loan is healthy (label 0) or has a high risk of defaulting (label 1) to assist the company making informed lending decisions.

Performance

Accuracy Score: The model achieved an accuracy of 0.99, indicating a high level of overall correct predictions.

Precision Score:

- Label 0 (Healthy Loan): Precision is 1.00, implying minimal false positives in identifying healthy loans.
- Label one (High-Risk Loan): Precision is 0.86, indicating some false positives in identifying high-risk loans.

Recall Score:

- Label 0 (Healthy Loan): Recall is 1.00, signifying that almost all healthy loans were correctly identified.
- Label one (High-Risk Loan): Recall is 0.91 showing a high proportion of correctly identified high risk loans but with some false negatives.

Summary and Recommendation

The logistic regression model demonstrates outstanding performance in predicting healthy loans (label 0), achieving perfect precision and recall scores. For high-risk loans (label 1), while the precision is slightly lower due to some false positives the recall remains high indicating a good ability to identify actual high-risk loans.

Reasons for recommending this model:

- **High Accuracy:** With an accuracy of 0.99, the model makes correct predictions for the majority of cases providing reliable credit risk assessment.
- **Balanced Performance:** The model maintains a good balance between precision and recall for both healthy and high-risk loans ensuring a comprehensive evaluation of creditworthiness.

Interpretability: Logistic regression offers interpretability, allowing stakeholders to understand the factors influencing credit risk decisions.

Areas for consideration:

- **Continuous Monitoring:** Regular monitoring and recalibration of the model are recommended to adapt to evolving market trends and borrower behaviors.

In conclusion based on its high accuracy, balance performance, and interpretability, the logistic regression model is recommended for use by the company to assess credit risk. Continuous refinement and monitoring will ensure its effectiveness in supporting prudent lending practices and minimizing potential risks.