Credit Risk Assessment Project

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Objective

Bank face challenges identifying which customers or companies should receive loans. The current lending strategy had limitations in assessing credit risk accurately. The bank need a more scientific approach to evaluate loan applicants and predict their likelihood of defaulting.

The goal is to **reduce non-performing assets (NPA)** and improve loan approval decisions, making the process more data-driven and efficient.

Approach

The problem is addressed by leveraging customer data from the bank and CIBIL, categorizing customers into four classes (P1 to P4 flag) based on their credit risk. **P1 represents the highest-priority**, lowest-risk customers, followed by P2 and P3, with P4 being the highest-risk, lowest-priority group.

To address this, relevant financial and behavioral indicators associated with priority flag were selected, and a machine learning based classification model is implemented for credit risk assessment. Once the customer is classified, based on the **risk appetite** the classes can be selected for loan approval and money lending proposal.

Results

The classification model effectively identifies customer risk levels, particularly for **P2, P3, and P4 categories**, helping the bank make informed lending decisions.

However, in rare cases **(4 out of 100 times)**, the model may **misclassify P1 (highest-priority) customers as P3**, which could lead to missed opportunities to lend to highly creditworthy individuals.

The **credit score** highly contributes to classification into classes followed by customer **credit age**, number of **standard payment in last 12 months** and in credit life, **credit inquiries** in last 3 months, and many more.

The **demographic data** like education, income, and time at current company also shows contribution with classification into classes.

Despite minor misclassifications, the model significantly improves the bank's ability to assess credit risk, reducing potential losses and making loan approvals more efficient. 🚀

Approved_Flag	min	max
P1	701	811
P2	669	700
P3	489	776
P4	469	658

Next Steps

Model should be retrained based on updated data organically over time or through feedback from end-user.

Identify more attributes that may contribute to classification.

Fine-tuning the model to improve P1 P3 classification.