Loan Default Prediction Performance Report

Objective

Develop a classification model to predict whether a loan applicant will default, enabling lenders to minimize risk.

Model Evaluation Summary

Model: LightGBM

Precision (Default): 0.81

Recall (Default): 0.65

F1 Score (Default): 0.72

Model: SVM

Precision (Default): 0.73

Recall (Default): 0.58

F1 Score (Default): 0.65

Feature Importance (LightGBM)

1. Interest Rate

2. Debt-to-Income Ratio

3. Credit Utilization

4. Loan Amount

5. Income Verification Type

6. Employment Length

7. Number of Delinquencies

Recommendations for Lenders

1. Risk-Based Interest Pricing: Adjust interest or security based on risk factors.

2. Stricter Screening: Flag or reject applicants with unverified income, short employment, or delinquencies.

3. Credit Counseling & Limits: Advise high-utilization applicants to reduce debt.

4. Dynamic Monitoring: Use models post-loan to catch early signs of default.

5. Rule Integration: Use key features in rule-based systems to enhance decisions.

Conclusion

The LightGBM model provides a strong balance of precision and recall, making it suitable for identifying high-risk loan applicants. Integrating this model into the loan approval process can significantly reduce default risk.