Homework 20 Questions

Homework 20

1. How well does the logistic regression model predict both the 0 (healthy loan) and 1 (high-risk loan) labels? The logistic regression model performs great for both classes. For healthy loans (class 0), the model has near-perfect precision, recall, and F1-scores. 1.00 across those three areas.. For high-risk loans (class 1), the model has good precision (0.88), excellent recall (0.98), and a strong F1-score (0.93). Overall accuracy is 0.99, indicating the model is highly effective at classifying both loan types. The high recall for class 1 is particularly important as it means the model successfully identifies 98% of all high-risk loans, minimizing the chance of approving loans that might default
2. Write a Credit Risk Analysis Report. Explain the purpose of this analysis. Using a bulleted list, describe the accuracy score, the precision score, and recall score of the machine learning model. Summarize the results from the machine learning model. Include your justification for recommending the model for use by the company. If you don't recommend the model, justify your reasoning.

   This analysis aims to build a model that can accurately predict the creditworthiness of borrowers based on historical lending data. Using financial information like loan size, interest rate, income, debt, and account details, we trained a logistic regression model to classify loans as either healthy (0) or high-risk (1)."

   Results:

   - Accuracy: 0.99
   - Precision: 1.00 for healthy loans, 0.88 for high-risk loans
   - Recall: 1.00 for healthy loans, 0.98 for high-risk loans

   Summary: The logistic regression model demonstrates excellent performance in predicting both healthy and high-risk loans. With 99% overall accuracy and 98% recall for high-risk loans, the model effectively minimizes both false positives and false negatives. I recommend implementing this model for preliminary credit risk assessment as it would help the company reduce default rates by effectively identifying high-risk borrowers. The high recall for high-risk loans is particularly valuable as it minimizes the potential financial losses from defaults. However, the model should complement, not replace, human judgment in the final decision-making process.