Analytics Lab

Personal Loans Acceptance Predictive Modelling Using Machine Learning Techniques

ABSTRACT

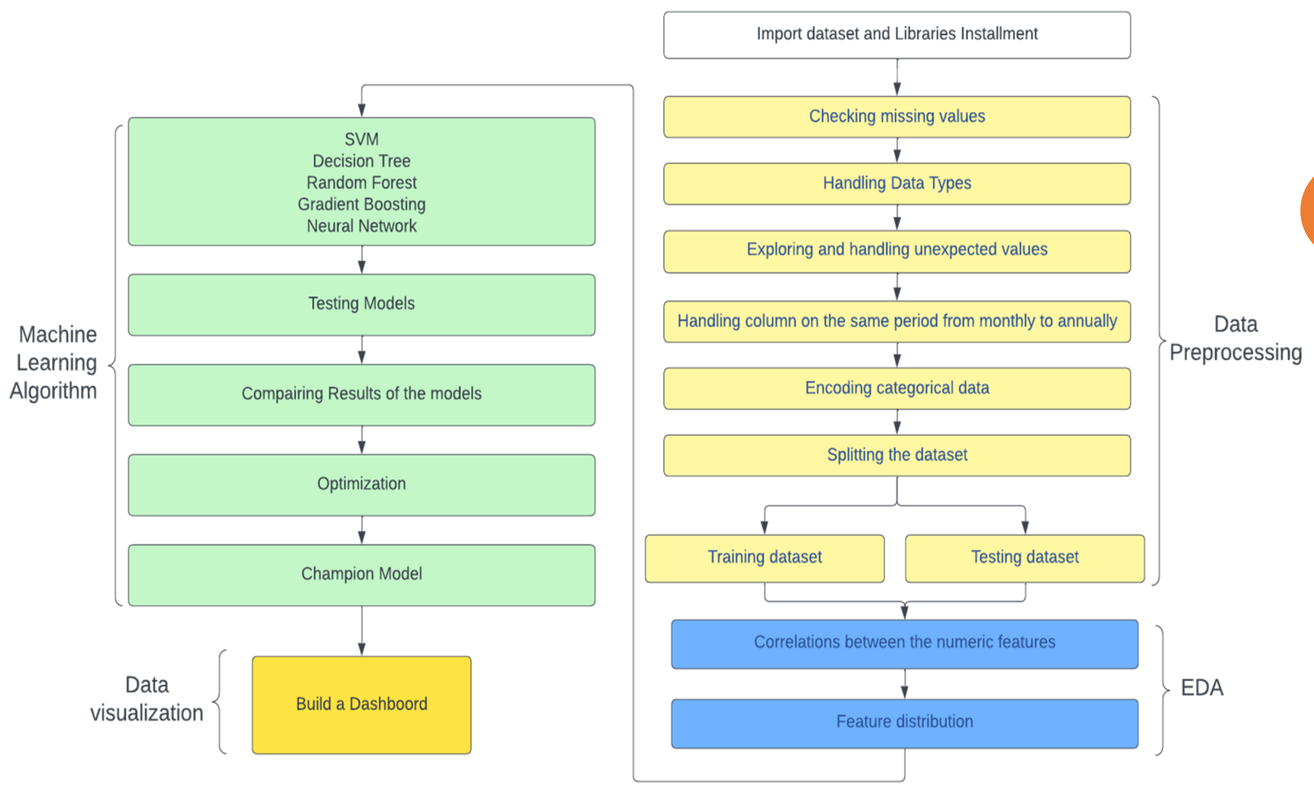
- This project proposed a machine learning approach to predict acceptance of personal loans by bank clients.
- Data is obtained from past loan applications.
- The results show that the **Gradient Boosting** machine learning algorithms can accurately predict acceptance with a high degree of accuracy.

OBJECTIVE

1) To develop **a decision support system** for classifying clients into groups likely to accept loans.
2) To identify **characteristics** that make a customer likely to accept a loan.

METHODOLOGY

- Python programming.
- The end-to-end flow consists of six main steps performed to determine the champion model to predict who will accept personal loans.



PROBLEM STATEMENT

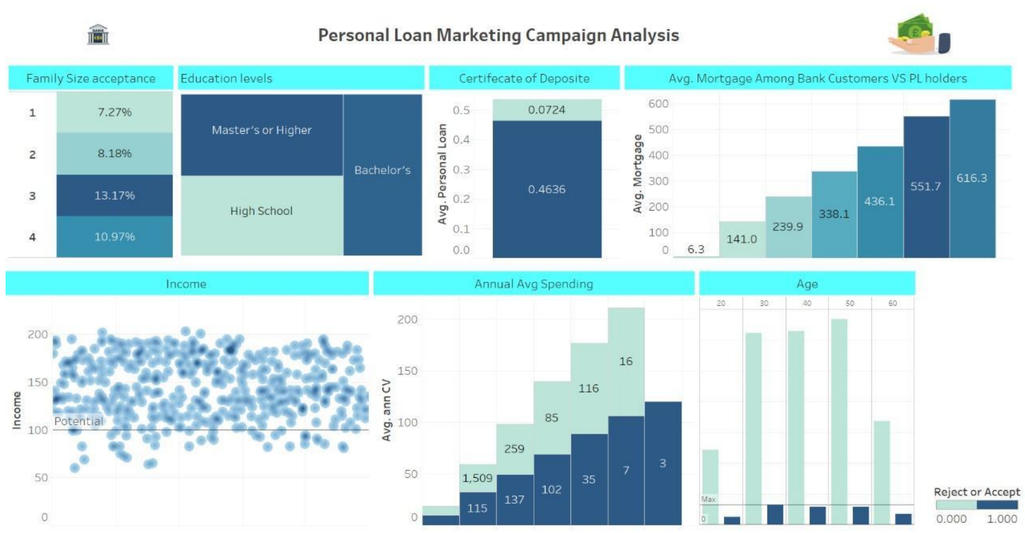
- Sales teams face challenges in selecting the best customers which wastes a lot of time and money.
- Failure to identify the characteristics of the ideal customer.

DISCUSSION

Gradient Boosting is the best confusion matrix based

Rank	Model	Accuracy	Precision	Recall	F1-Score
1	Gradient Boosting	0.99	1.00	0.96	0.98
2	Random Forest	0.99	0.97	0.95	0.96
3	Neural Network	0.98	0.94	0.93	0.94
4	Decision Tree	0.98	0.93	0.94	0.94
5	SVM	0.97	0.95	0.84	0.88

The dashboard shows the best characteristics that can indicate the client will accept the personal loan.



CONCLUSION

- High-income customers with mortgages, higher monthly average spending, and certificate of deposit were the highest **indicators of clients accepting the loan**.
- This study helps sales teams in the bank department by **identifying potential clients** likely to accept a personal loan,
- It serves as an example of using **machine learning in the finance** sector, particularly for investment companies providing loans to high-credit-risk investors.

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