

Loan Approval Model

Using Machine Learning

"Predicting Loans, Perfectly."



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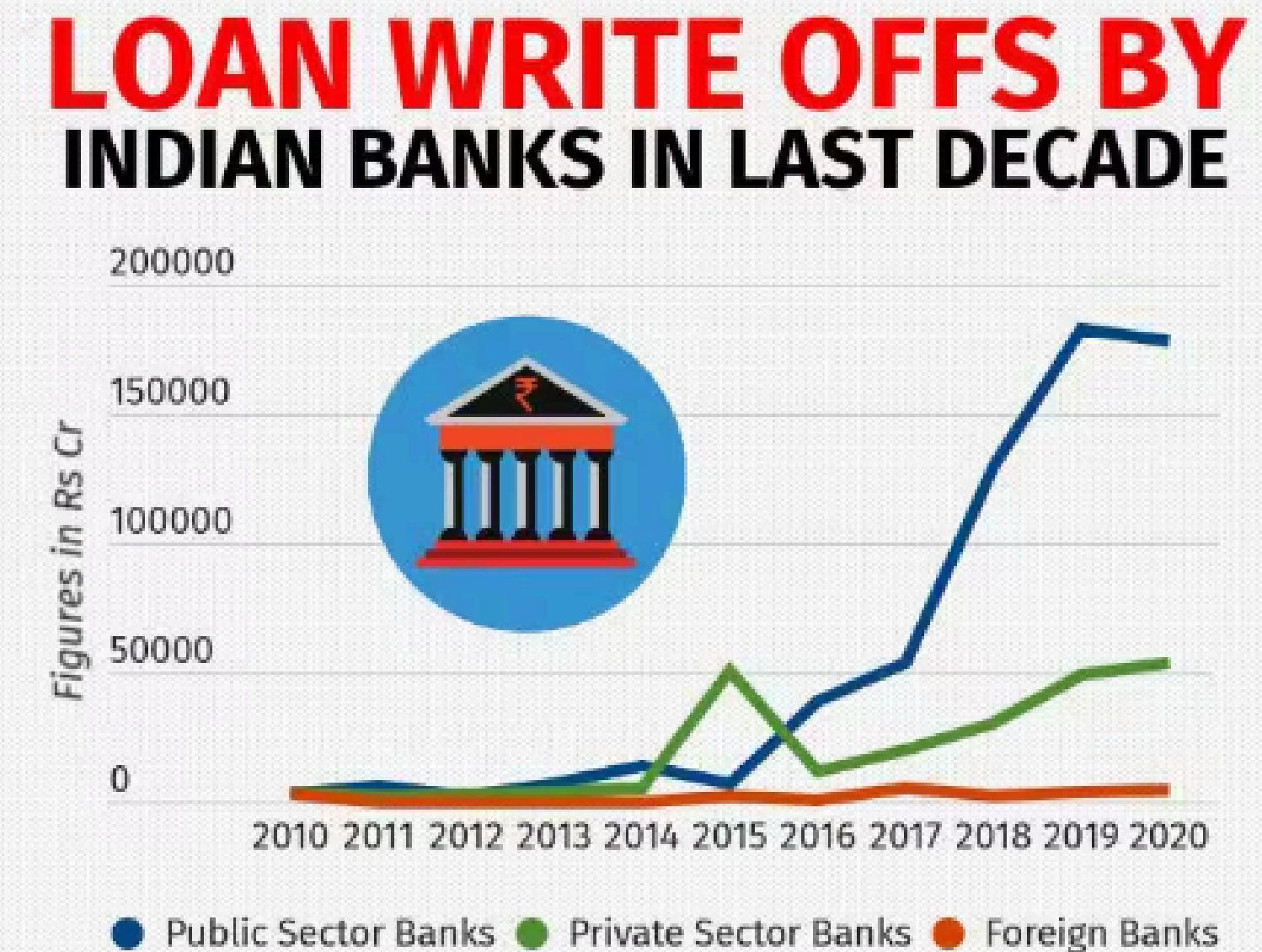
Introduction

- Loan approval prediction is critical for financial institutions.
- This project uses machine learning to automate and optimize loan decisions.
- Ensures faster and more accurate outcomes.



Problem Statement

- Manual loan approval processes face these challenges:
 1. High processing time.
 2. Risk of human bias.
 3. Inconsistent decision-making.
- A smarter, data-driven solution is required to address these issues.



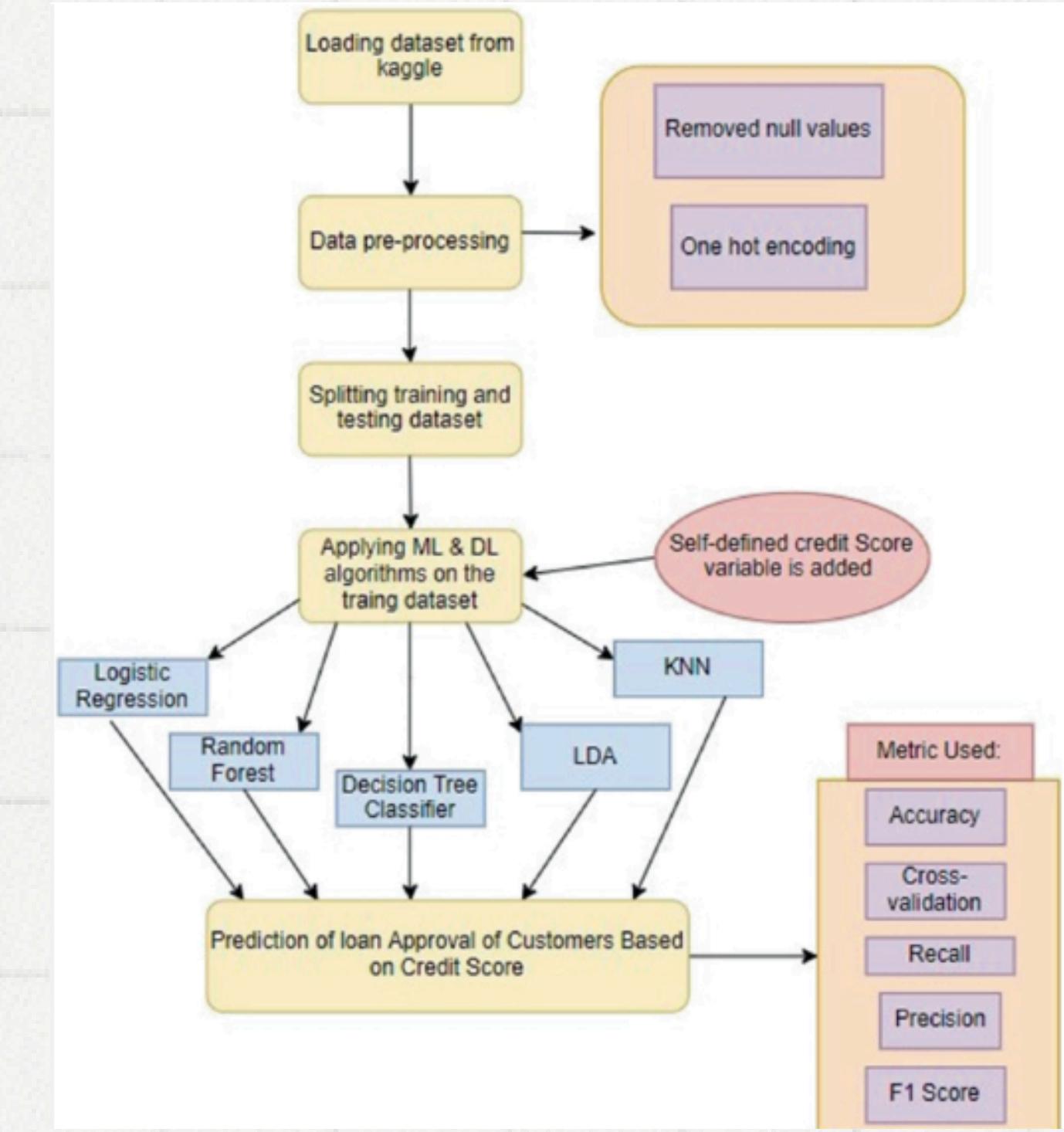
Solution Overview

- A machine learning model predicts loan approvals using key financial and demographic features
- **Benefits include:**
 - 1.Faster processing times.
 - 2.Increased accuracy.
 - 3.Reduced bias in decision-making.

Methodology

Steps followed in the project:

- Data preprocessing: Cleaning, encoding, and scaling the dataset.
- Model training: Tested algorithms like Logistic Regression and Random Forest.
- Evaluation: Metrics like accuracy, precision, and recall.
- Optimization: Fine-tuning for best results.



Model Evaluation

Performance metrics:

- Accuracy: 92%.
- Precision: 90%.
- Recall: 88%.
- F1-Score: 89%.



Random Forest outperformed other models in terms of accuracy and stability.

Conclusion

Key Insights:

- Credit score and income are the most significant features influencing approval.
- Early detection of risky applications reduces default rates.
- Automated approvals save time and reduce operational costs.

Impact of the solution:

- Enhanced accuracy and efficiency.
- Data-driven decision-making.
- Reduced operational workload.

Future Work:

- Integration with live banking systems.
- Refinement using larger datasets.

**Thank you
very much!**