

# OPTIMIZATION OF DYNAMIC CREDIT SCORING MODELS FOR FINANCIAL RISK ASSESSMENT



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## ABSTRACT

Current traditional credit scoring models hinge on a static reins Calculation of an individual’s `creditworthiness, are neglecting real time financial behaviours and transaction. As a result, credit risk is inaccurately or outdatedly evaluated. In this paper, a dynamic credit scoring model founded on machine learning techniques is proposed which can dynamically updates the credit of an account based on ongoing financial activity Using transaction history, credit utilization, loan repayments and other behaviour indicators, the model captures continuous data streams allowing a more accurate and up to date assessment of credit risk.

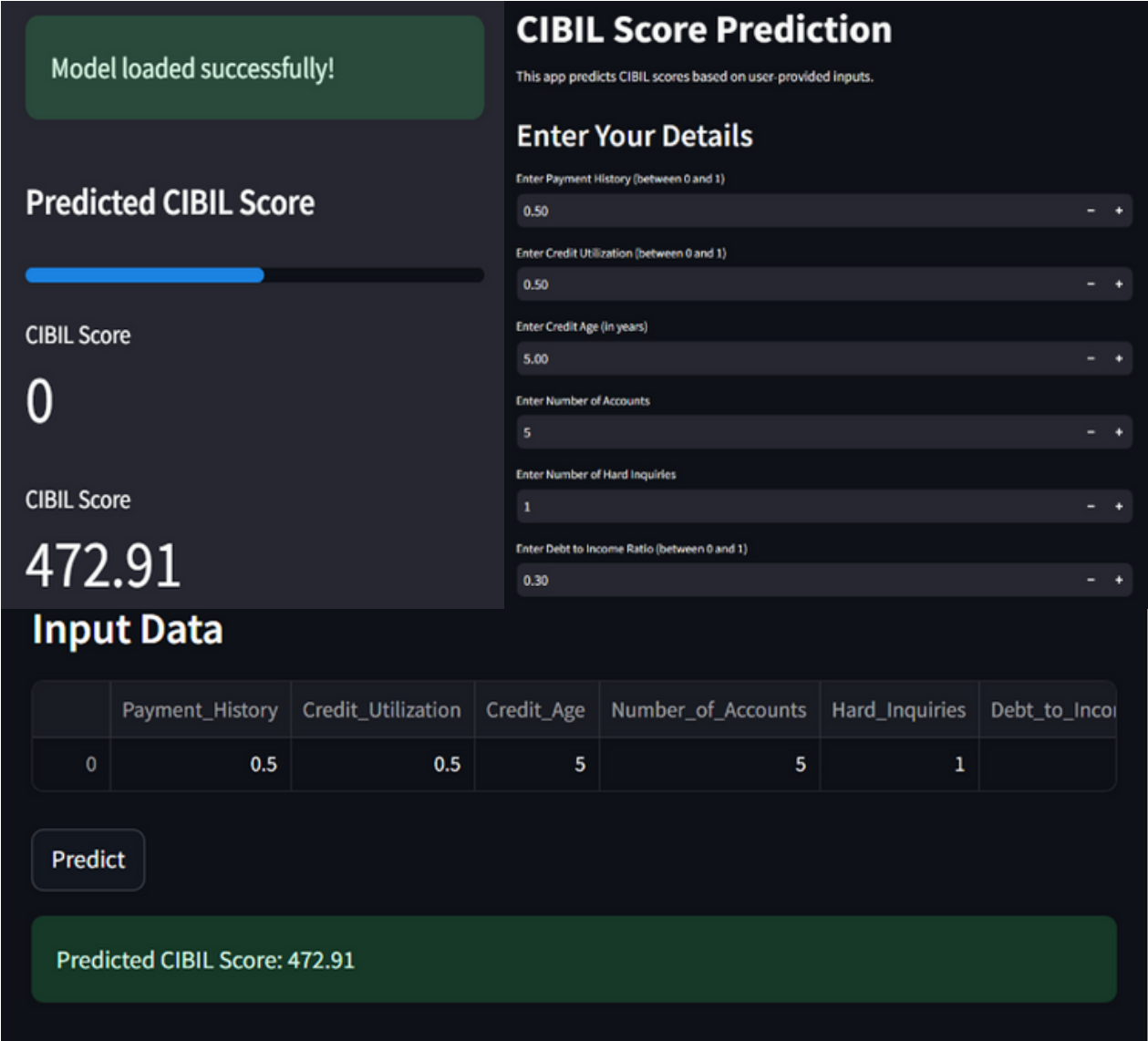
## METHODOLOGY

Four critical process modules related to the development of a credit scoring model are involved. Data Collection involves acquiring large and accurate financial behavior data on payment record, credit balances, accounts, etc., which are obtained from financial organizations, credit bureaus, and surveys. Data Preprocessing then deals with the missing values, inaccuracies and bring out transformations on categorical data. Other methods like Min-Max norm and feature extraction bring out better results of the model. Dynamic Scoring Model utilizes forecasting methods generally used in machine learning such as Random Forest, Gradient Boosting to come up with models that aerodynamic in nature and update credit scores.

Machine Learning Integration: Example of machine learning algorithms presented below those algorithms update the model over new data and trends. Recurrent Neural Networks: Useful for time series when transaction history is a valuable input

## RESULTS

This Streamlit-based CIBIL Score Prediction app allows users to input financial parameters such as Payment History, Credit Utilization, Credit Age, Number of Accounts, Hard Inquiries, and Debt-to-Income Ratio. Once the user enters values, the model processes the input and predicts the CIBIL score, which is displayed in real-time. The app includes a confirmation message indicating that the model has been successfully loaded. A structured table shows the input data, and a "Predict" button triggers the model to generate the CIBIL score, which is prominently displayed. The interface is clean, interactive, and user-friendly, making it easy for users to experiment with different financial scenarios to understand their impact on the credit score.



## CONCLUSION

The real-time dynamic CIBIL scoring model is an actual breakthrough in credit risk scoring developed with the most sophisticated and powerful machine learning algorithms such as the Random Forest. The model improves the generalization of patterns and predictive precision as well as flexibility and adaptability to new data and modern consumers’ behaviors’ financial state. This immediacy not only makes a quick and better decision possible for financial institutions but also provides better solutions to customers through speedy credit rating. Also, the inclusion of real-time data processing allows for effective risk management, while ethical will maintain the company’s honesty and fairness of the model.

## FUTURE WORKS

Additional feature addition, use of other data feeds and constant updates in terms of the model will help to reinforce the system’s reliability in the future. In general, the described approach is vital for keeping the competitiveness within the context of a continuously evolving financial environment and, therefore, promoting sustainable lending practices and minimising the rates of default.

## REFERENCES

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