

Report

Loan Approval Prediction

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Team:-

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| 2. Sandeep Kumar | 5. Manu Kumar |
| 3. Pradeep kumar | 6. Yashwardhan Singh |

Introduction :-

Loan-Predictor is a web application designed to predict loan amounts for individuals based on various factors. Our system utilizes machine learning models, specifically linear regression and random forest, to analyze data and provide accurate loan predictions.

Whether an individual seeking an estimate for a personal loan or a financial institution analyzing loan data from a CSV file, this platform provides dependable predictions to empower people in making well-informed decisions.

How does it work ?:-

1. Take input from User : Types of inputs allowed - User Individual Data
Csv file of data
2. Processing : By gaining user data and using it as parameters our model will predict whether users can get Loan approval or not.
3. Output : After processing user data, the user will get a prediction by model about loan approval on the same home page.

Features:-

1. Loan Prediction:-

1. By Individual Prediction:-

- Users can input their data (such as gender, marital status, income, etc.) into a form on the website.

- Based on this input, the application predicts whether the user's loan will be approved or rejected.
- The prediction is displayed on the webpage.

2. By CSV File Upload Prediction:

- Users have the option to upload a CSV file containing multiple loan applications.
- The application processes this file and provides predictions for each entry in the CSV.
- Results are displayed on the webpage, indicating whether each application is approved or rejected.

3. User Signup and Login:-

- Users can sign up for an account by providing a username, mobile number, email, and password.
- Upon successful signup, the user's information is stored securely in a PostgreSQL database.
- Users can then log in using their email and password.
- User authentication ensures that only registered users can access certain features of the application.

4. Loan Interest Calculator:-

- Users can calculate the interest on a loan by entering the principal amount and the loan duration (in years).
- The application calculates the interest using a fixed interest rate and displays it to the user.

5. Text-to-Speech Conversion:-

- Users can input text into a form on the website.
- The application converts this text into speech using Google's Text-to-Speech service (gTTS).
- The generated audio is played back to the user.

6. Generative AI Chatbot:-

- Users can engage in a conversation with a chatbot.
- The chatbot generates responses based on user input using Google Generative AI.
- Users can ask questions or initiate conversations related to loan approval, and the chatbot responds accordingly.

Libraries Used:-

1. Pickle:-

- Pickle is like a special box in Python. It helps to save and bring back things, kind of like saving a game in a video game and then loading it later.

2. Scikit-learn :-

- Scikit-learn is a handy tool for Python that helps you understand and analyze data. It's like having a smart assistant who helps you with math problems and finding patterns in your schoolwork.

3. Hashlib:-

- Hashlib is a secret tool in Python that makes passwords safer. It's like turning your password into a secret code so that only you can read it, like writing your secret messages in invisible ink.

4. Gtts (gTTS):-

- Gtts is a cool tool for Python that makes your computer talk. It's like having a robot friend who can read out loud whatever you type, like having a talking robot assistant.

5. Pyglet:-

- Pyglet is a fun tool for Python that lets you play with sounds and pictures on your computer. It's like having a magic box that can make music and show videos, like having a mini movie theater on your computer.

6. Google GenerativeAI:-

- The Google GenerativeAI library is a special tool that helps Python create stories and text. It's like having a super-smart writer friend who can help you write cool stories and essays.

Team Contribution :-

Backend Part : (Sandeep kumar and Pradeep Kumar)

1. **Sandeep Kumar:** His contribution is in integrating the chatbot for our website using gemini api, managing the csv file input, and managing the facilitation of listening to the terms and conditions page. Basically it is for a quick overview about the whole information in less time for loan approval. For these features he also managed the integration of different files needed for it with the flask code.

2. **Pradeep Kumar:** Mine contribution includes the management of the code for the individual prediction of loan approval, simple interest calculator for the applicants. After this integration of code for these features with flask and the coding for Signup and login page which is necessary for backend and connection with the database.

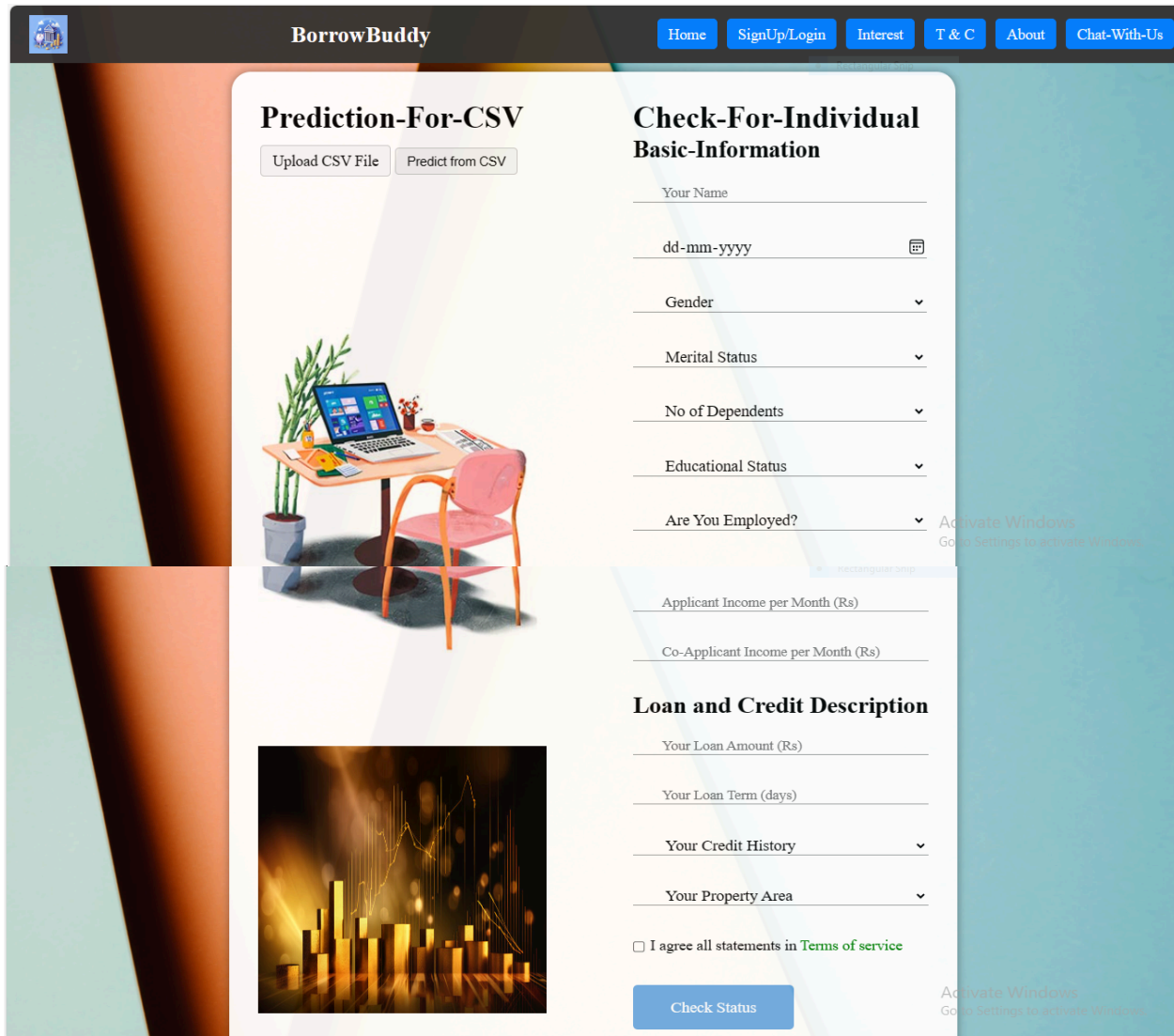
Frontend Part : (Pallavi, Manu Kumar, Yashwardhan Singh)

1. **Pallavi :**
Pallavi led the frontend development efforts, focusing on creating intuitive user interfaces using HTML and CSS. She prepared the main home page for taking input and showing the result to the user.
Templates made by her : Home Page, Show Prediction
2. **Manu Kumar :**
Manu contributed to the frontend design and layout. He worked on rendering dynamic content, handling form submissions and implementing client side validations to enhance user interaction and feedback.
Templates made by him : Sign In/Sign Up Page, About Page
3. **Yashwardhan Singh :**
Yash integrated backend functionalities with the frontend interfaces. He facilitated communication between the client side and server side components, ensuring seamless dataflow and interaction within the application.
Templates made by him : Terms and conditions Page and other CSS parts.

Machine learning Part : (Shravan Bishnoi)

Demo Inputs and Outputs of Product :-

1.Home Page :- This is the form to be filled by the applicant. It needs all the information.



The screenshot shows the BorrowBuddy website's home page. The header is dark blue with the BorrowBuddy logo and navigation links: Home, SignUp/Login, Interest, T & C, About, and Chat-With-Us. The main content area is divided into two columns. The left column, titled 'Prediction-For-CSV', features an illustration of a desk with a laptop and a plant, and a button to 'Predict from CSV'. The right column, titled 'Check-For-Individual Basic-Information', contains a form with fields for Name, Date (dd-mm-yyyy), Gender, Marital Status, No of Dependents, Educational Status, and Are You Employed?. Below these are fields for Applicant Income per Month (Rs) and Co-Applicant Income per Month (Rs). The 'Loan and Credit Description' section includes fields for Your Loan Amount (Rs), Your Loan Term (days), Your Credit History, and Your Property Area. A checkbox for 'I agree all statements in Terms of service' is present, followed by a 'Check Status' button. The background of the page features a large, stylized illustration of a person's leg and a bar chart with a line graph.

BorrowBuddy

Home SignUp/Login Interest T & C About Chat-With-Us

Prediction-For-CSV

Upload CSV File Predict from CSV

Check-For-Individual Basic-Information

Your Name

dd-mm-yyyy

Gender

Marital Status

No of Dependents

Educational Status

Are You Employed?

Applicant Income per Month (Rs)

Co-Applicant Income per Month (Rs)

Loan and Credit Description

Your Loan Amount (Rs)

Your Loan Term (days)

Your Credit History

Your Property Area

☐ I agree all statements in [Terms of service](#)

Check Status

3. Prediction for Individual



Prediction

The loan approval is obtained using the machine learning model. It has the accuracy of around 79%. To obtain this model performance, we have acquired the training data from a public dataset library.


Sorry Shobhit Yadav, your loan is rejected!

No.	Name	Prediction
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Activate Windows
Go to Settings to activate Windows.

3. Result for CSV prediction:

Predicts for the Group of persons



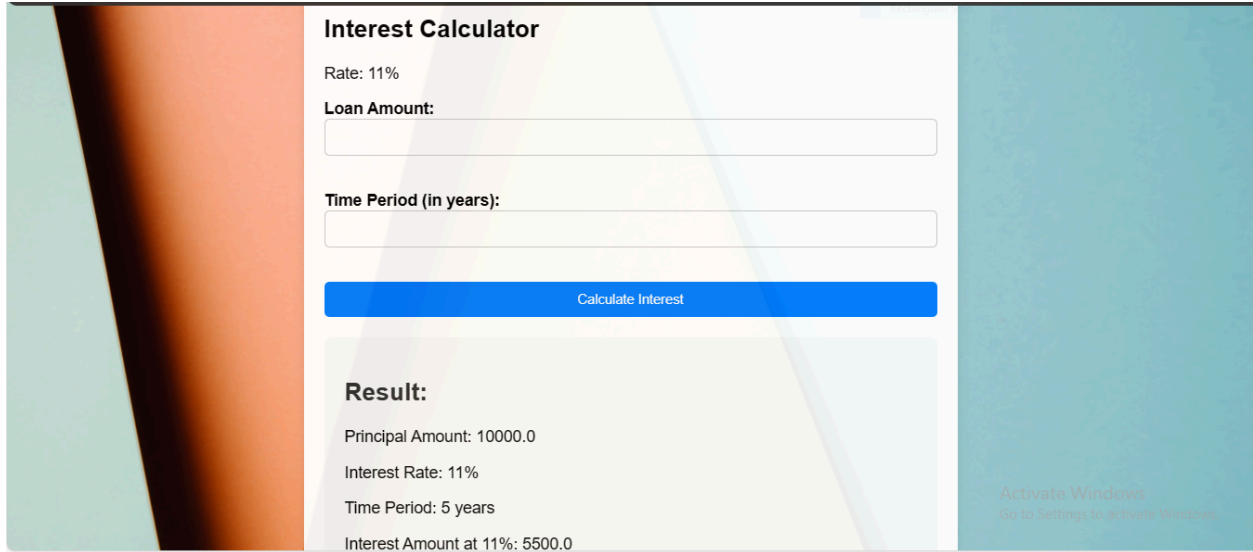
Prediction

The loan approval is obtained using the machine learning model. It has the accuracy of around 79%. To obtain this model performance, we have acquired the training data from a public dataset library.

No.	Name	Prediction
1	Pradeep	Rejected
2	Sandeep	Rejected
3	Yashwardhan	Rejected
4	Pallavi	Rejected
5	Shravan	Rejected
6	Manu	Rejected

Activate Windows
Go to Settings to activate Windows.

4. Simple Interest calculator

The image shows a web application titled "Interest Calculator". It features a light blue background with a dark blue sidebar on the left. The main content area has a white background. At the top, the title "Interest Calculator" is displayed. Below it, the "Rate" is set to "11%". There is a "Loan Amount:" label followed by an empty input field. Below that is a "Time Period (in years):" label followed by an empty input field. A blue button labeled "Calculate Interest" is positioned below the input fields. Underneath the button, the "Result:" section displays the following information: "Principal Amount: 10000.0", "Interest Rate: 11%", "Time Period: 5 years", and "Interest Amount at 11%: 5500.0". In the bottom right corner, there is a small text that says "Activate Windows Go to Settings to activate Windows".

Interest Calculator

Rate: 11%

Loan Amount:

Time Period (in years):

Calculate Interest

Result:

Principal Amount: 10000.0

Interest Rate: 11%

Time Period: 5 years

Interest Amount at 11%: 5500.0

Activate Windows
Go to Settings to activate Windows

Future Enhancements :-

1. Integration of additional machine learning models for more accurate predictions and risk assessment.
2. Incorporation of data visualization techniques to provide insights into loan approval trends and patterns.
3. Help user to

Conclusion :-

The loan approval prediction project showcases a successful collaboration between frontend and backend teams, resulting in the creation of a robust and user-friendly application. By harnessing the power of machine learning and web technologies, the project caters to the evolving requirements of financial institutions, thereby facilitating improved efficiency and decision-making in loan processing.

Thank you sir.