Report

Loan Approval Prediction

Date : 26-04-2024

Team:-

1. Shravan Bishnoi (Head)
2. Sandeep Kumar
3. Pradeep kumar
4. Pallavi
5. Manu 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 upi, 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

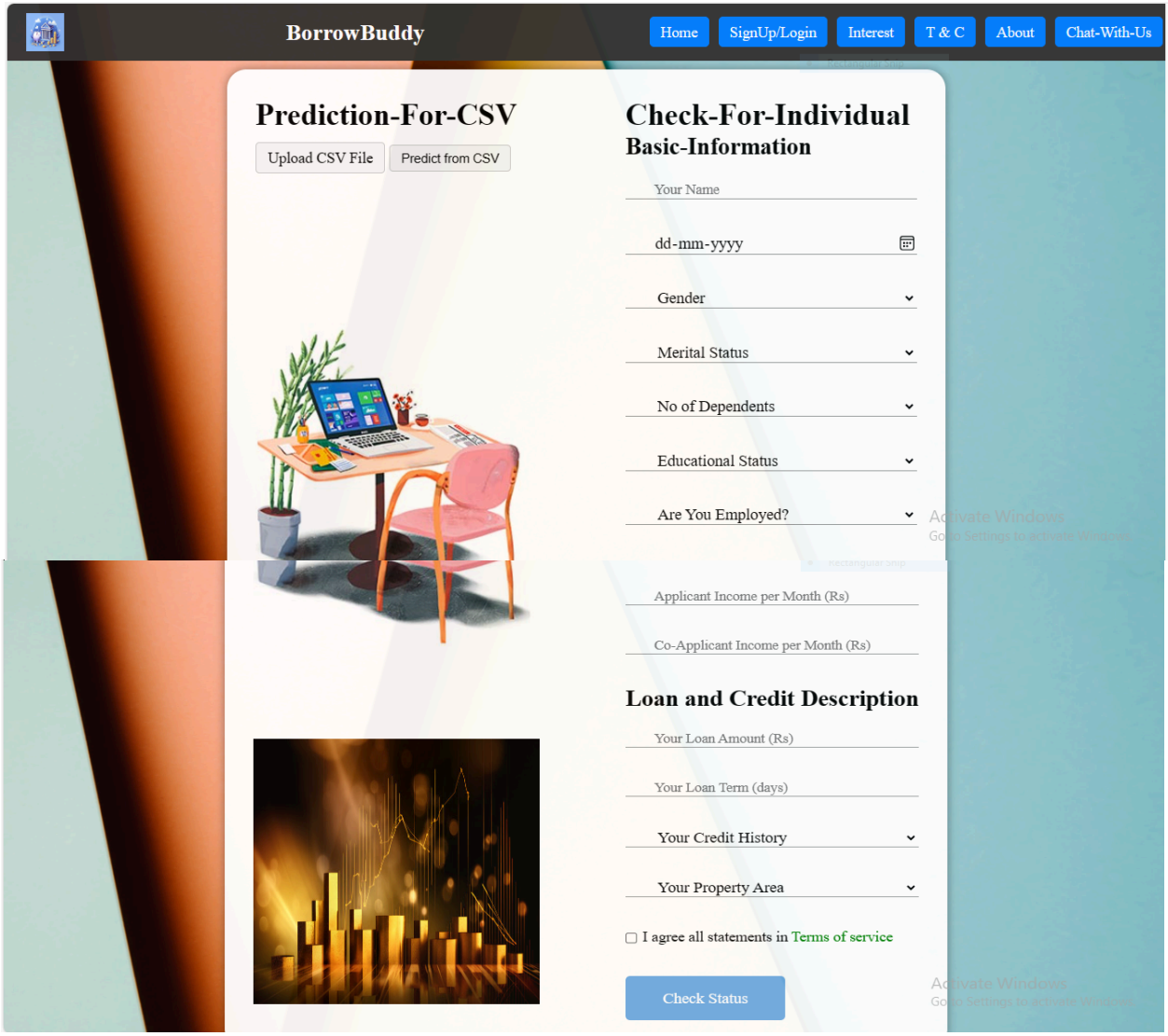
2. **Manu Kumar** :
   Manu contributed to the frontend design and layout. He worked on rendering dynamic content, handling form submissions and implementing client side validations to enhance user interaction and feedback.
   Templates made by him : Sign In/Sign Up Page, About Page

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.

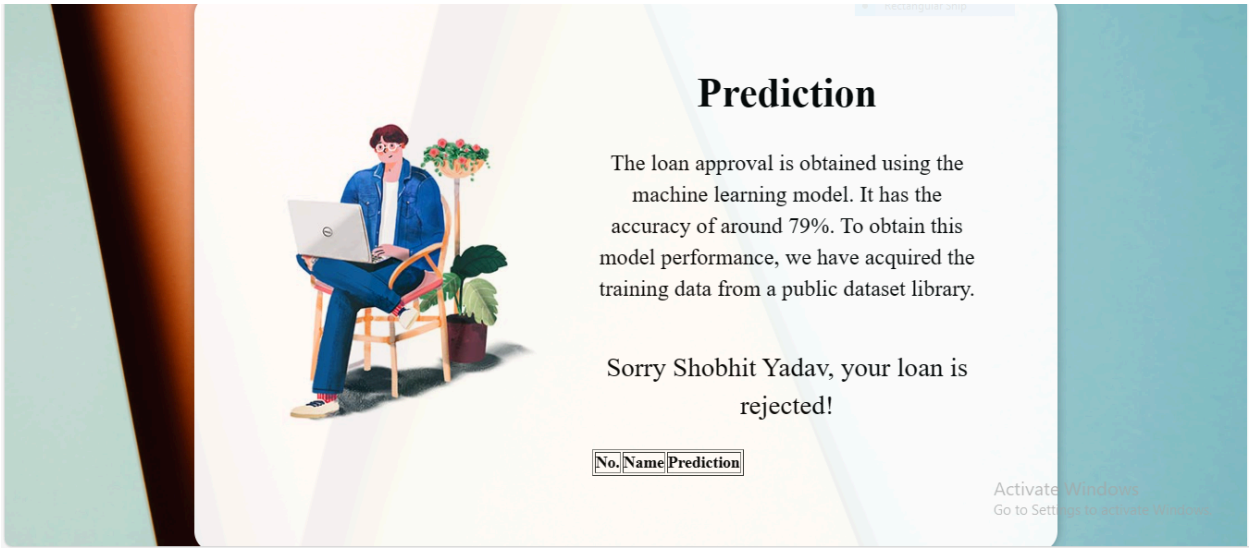
Machine learning Part : (Shravan Bishnoi)

Demo Inputs and Outputs of Product :-

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

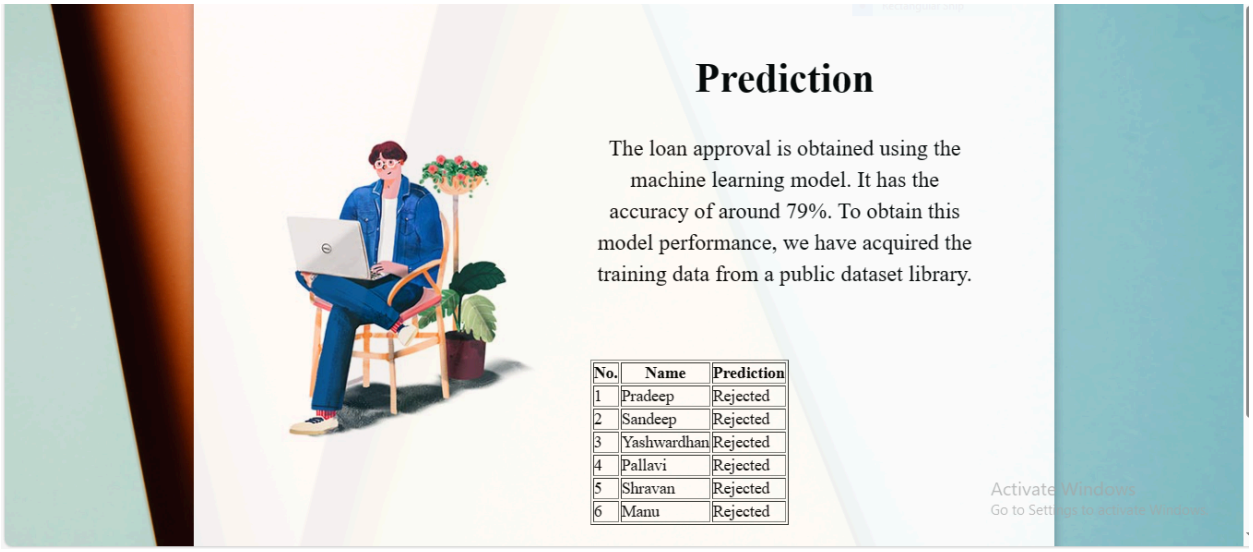


3. Prediction for Individual

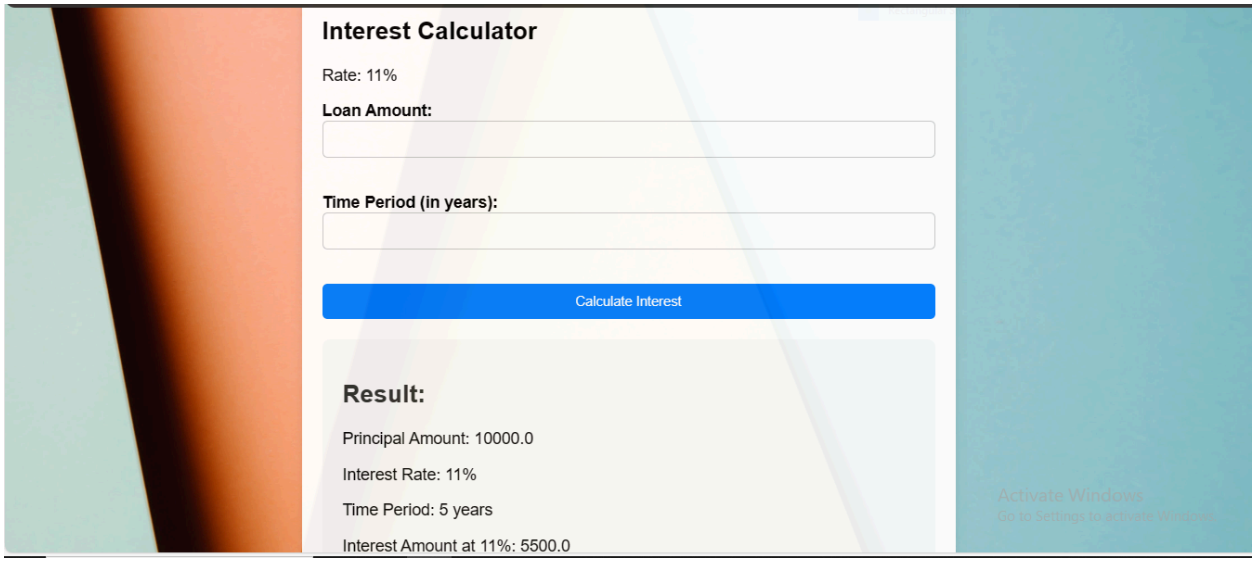


3. **Result for CSV prediction:**

Predicts for the Group of persons



4.Simple Interest calculator



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.