



Smart
Internz



PROJECT DOCUMENTATION

Project Title - SmartLender

LONGTERM INTERNSHIP

TEAM MEMBERS

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INTRODUCTION:-

The Loan approval prediction System is designed to assist financial institutions in automating the Loan approval process. By analyzing various characteristics such as annual income, Loan amount, credit score and assets, the System predicts whether a Loan application should be approved or rejected.

OVERVIEW

The System utilizes machine Learning techniques to analyze historical Loan data and loan patterns for predicting Loan approvals. It offers a web-based interface for users to input their information and receive an instant decision on their Loan application.

ADVANTAGES

- Efficient and automated Loan approval process
- Reduces human error and bias in decision-making
- Improves customer experience with faster responses

- helps financial institutions manage risk effectively

DISADVANTAGES:

- Reliance on historical data may lead to biased decisions
- Limited by the Quality and Quantity of Available Data
- Potential For Algorithmic discrimination if not carefully monitored
- Requires periodic updates and recalibration to maintain accuracy

LITERATURE SURVEY

Prior research in this field has focused on using machine learning algorithms such as logistic regression, decision trees and neural networks for loan approval prediction. Studies have emphasized the importance of Feature Selection, Data preprocessing and Model evaluation techniques in building accurate and reliable prediction models.

HARDWARE AND SOFTWARE REQUIREMENTS

- Hardware: Standard Computer system with sufficient processing power and memory
- Software: Python programming languages for model development HTML & CSS for web interface, machine Learning libraries such as scikit-learn for model training and testing.

EXPERIMENTAL INVESTIGATIONS

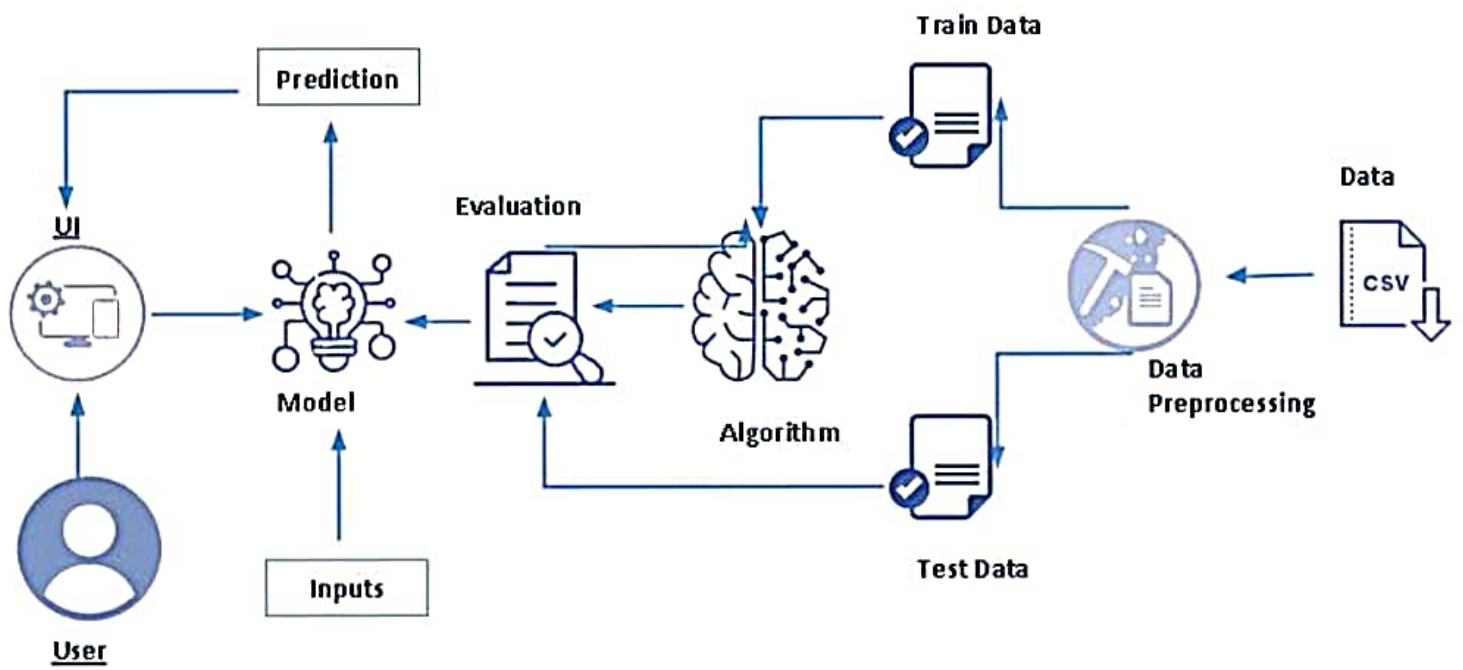
We conducted experiments to train and evaluate the performance of our loan approval prediction model using a dataset containing Historical Loan information. We employed techniques such as cross-validation and Hyperparameter tuning to optimize the model's accuracy and generalization capabilities.

APPLICATIONS

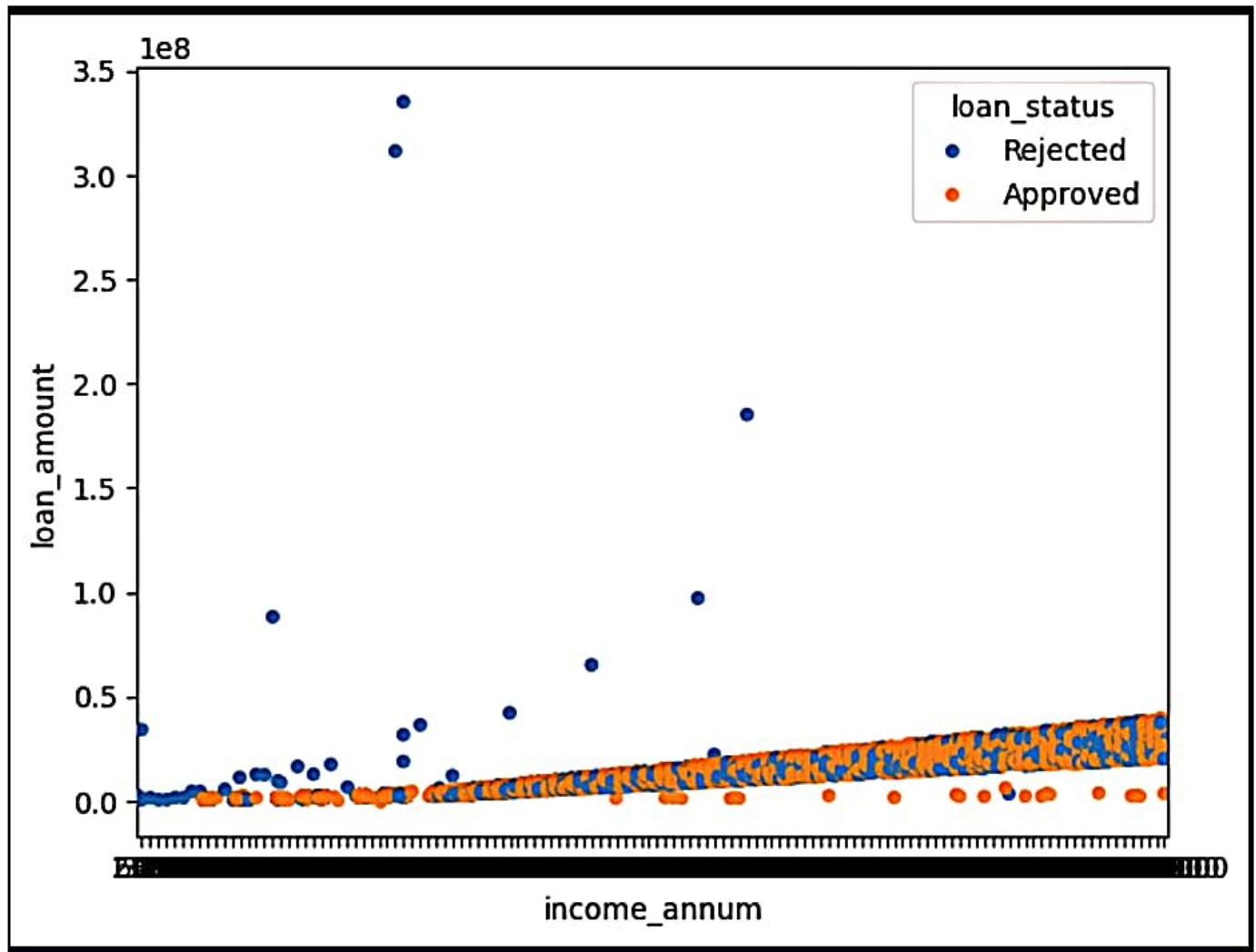
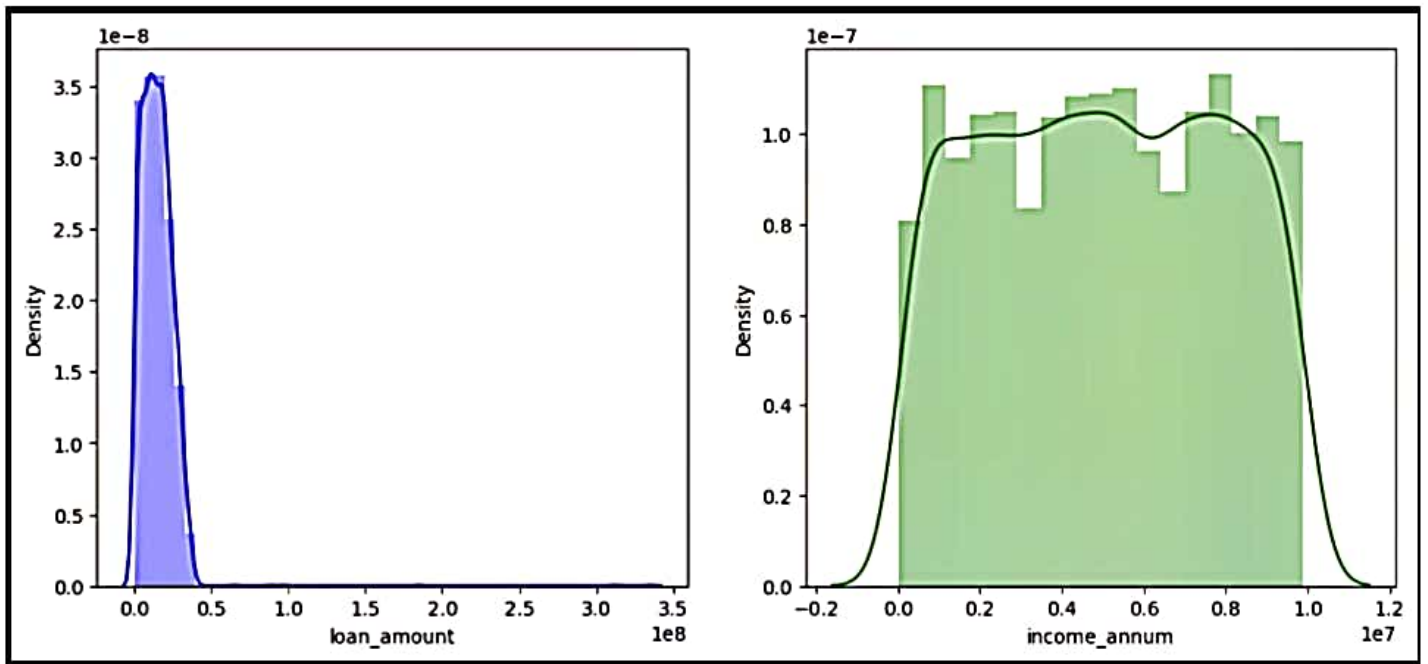
The Loan approval prediction system has various applications in the Financial Industry, including:

- Banks and Financial Institutions for Automating Loan approval processes

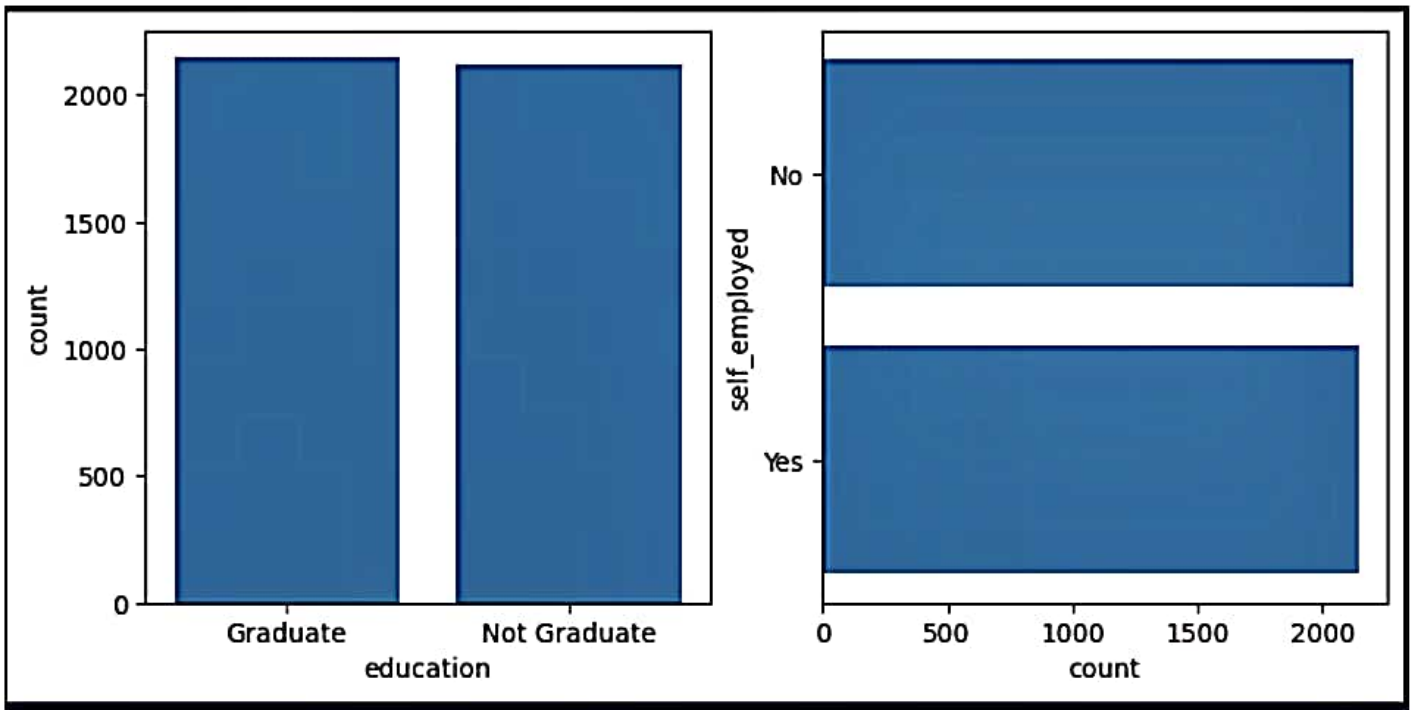
WORKFLOW



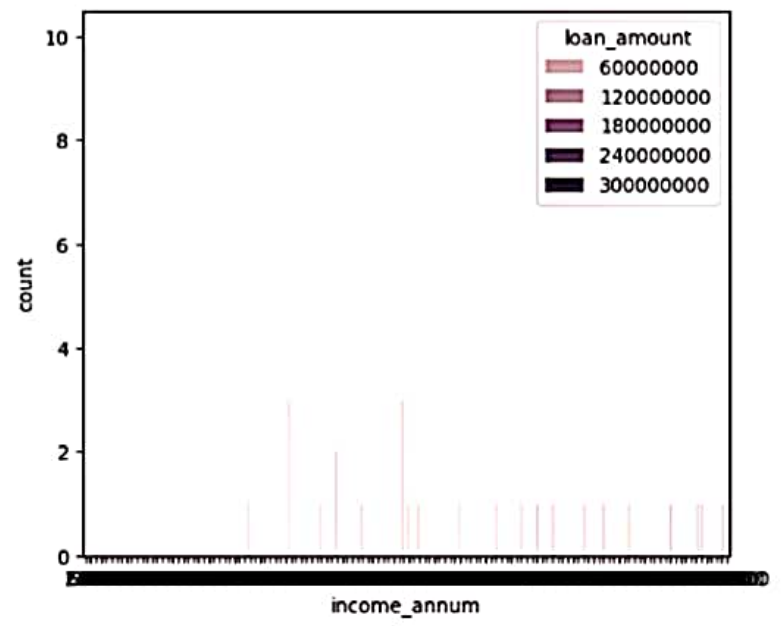
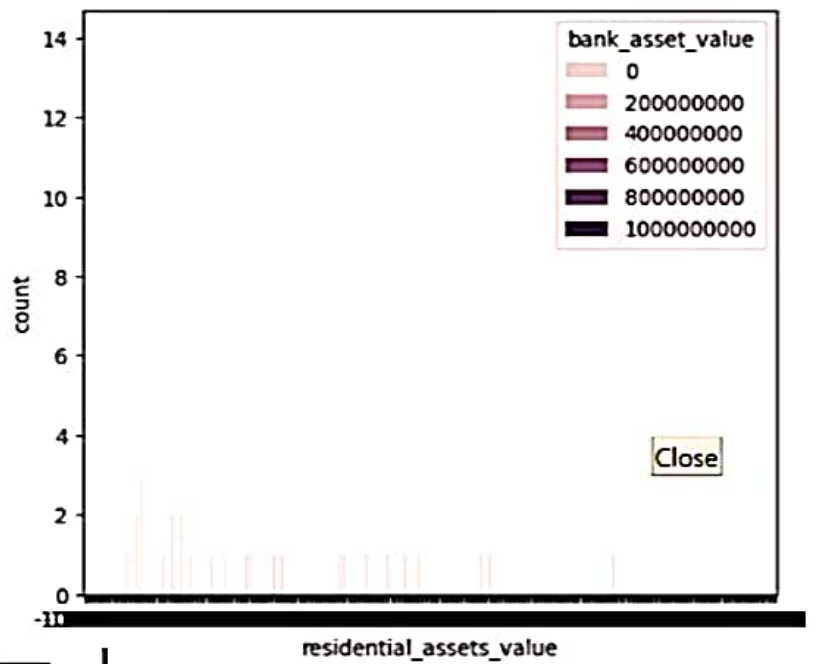
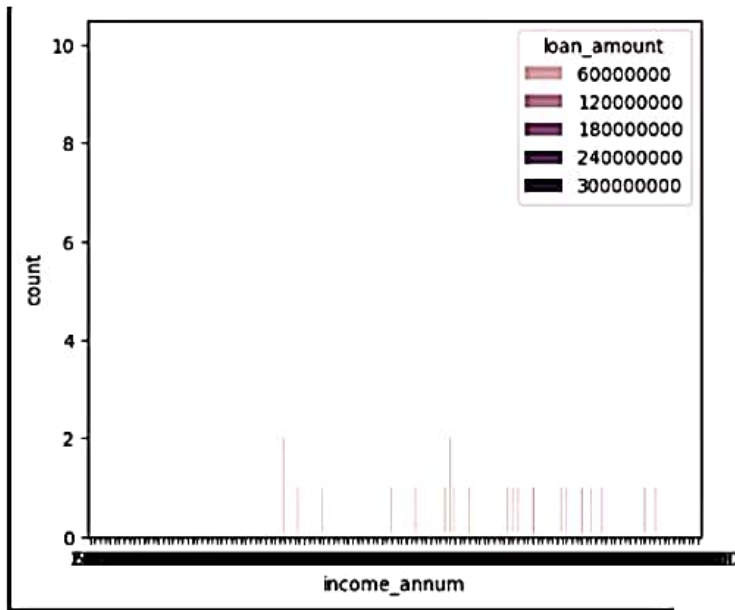
GRAPHS



GRAPHS



GRAPHS



- Peer-to-peer Lending platforms for assessing Borrower Risk
- Credit Scoring agencies for evaluating credit worthiness.

FUTURE SCOPE

The Loan approval prediction system has several avenues for future enhancement and expansion, including

- Integration of additional data sources such as social media profiles and transaction history for more comprehensive risk assessment
- Implementation of advanced machine learning techniques such as deep learning and ensemble methods to further improve prediction accuracy.
- Development of a mobile application for convenient access to the loan approval system, catering to a wider range of users
- Exploration of alternative data sources and features for predicting loan approval, such as employment history and education level
- Collaboration with regulatory authorities to ensure compliance with data privacy and fairness regulations

BIBLIOGRAPHY

Reference Books

- "Credit Scoring and its Applications" by Lync. Thomas, David B. Edelman, and Jonathan N. Crook
- "Machine Learning for Financial Engineering" by Lószló Györfi, György Ottucsák and Horvówalk.

Reference Websites

- Kaggle (www.kaggle.com). A platform for Data Science competitions and datasets, featuring resources and discussions on Loan prediction models
- Towards Data Science (towardsdatascience.com):
A blog and publication platform with articles and tutorials on machine learning applications in finance, including Loan approval prediction
- Github (github.com): Repository containing open-source implementations of Loan approval prediction systems and related machine learning projects.

CONCLUSION:

In conclusion, the Loan approval prediction system offers a reliable and efficient solution for automating the Loan approval process. By leveraging machine learning techniques and historical Loan data, the system can provide Quick and accurate decisions, thereby improving efficiency and customer satisfaction in the lending process. However, it is important to continuously monitor and update the System to ensure fairness and accuracy in decision making.


```

import pandas
import numpy as np
from flask import Flask, render_template, request, jsonify
import pickle
import time

model = pickle.load(open('./model/rdf_model.pkl', 'rb'))

app = Flask(__name__)

@app.get('/')
def home():
    return render_template("index.html")

@app.post('/predict')
def predict():
    dependents = int(request.json['dependents'])
    education = int(request.json['graduate'])
    selfEmployed = int(request.json['selfEmployed'])
    income = int(request.json['income'])
    loan = int(request.json['loan'])
    term = int(request.json['term'])
    cibil = int(request.json['cibil'])
    rassets = int(request.json['rassets'])
    cassets = int(request.json['cassets'])
    lassets = int(request.json['lassets'])
    bassets = int(request.json['bassets'])
    input_data = np.array([dependents, education, selfEmployed, income, loan, term, cibil, rassets, cassets, lassets, bassets])
    names = ['no_of_dependents', 'education', 'self_employed', 'income_annum', 'loan_amount', 'loan_term', 'cibil_score', 'residential_assets_value',
               'commercial_assets_value', 'luxury_assets_value', 'bank_asset_value']
    data = pandas.DataFrame([input_data], columns=names)
    prediction = model.predict(data)
    print(f"Prediction - {prediction}")
    time.sleep(2.5)
    return jsonify({
        'status': 200,
        'result': int(prediction)
    })

if __name__ == '__main__':
    app.run(debug=True)

```



Smart Lender. Your Loan Approval Predictor

Empowered by  Machine Learning

Let's Go →

Fill the details below

☒ Graduate

☐ Not Graduate

Self employed ? ☐

Annual income :

₹ 600000

No of dependents :

2

Loan amount (₹) :

₹ 2500000

Loan term (in years) :

18

Cibil score :

800

Residential assets value (₹) :

₹ 1200000



Your Loan will be Approved



Your Loan will be Rejected

