

CAP

Credit Approval Prediction

Data - Driven Loan Genius



What is CAP

01 Enhanced Lending Practices

Credit Approval Prediction aims to improve lending practices by enhancing accuracy in loan approval evaluations, thereby reducing inefficiencies and disparities.

02 Advanced Data Analytics and Machine Learning

Utilizes data analytics and machine learning algorithms to assess loan approval likelihood, credit score, and defaulter risk, ensuring a more informed decision-making process.

03 Comprehensive Financial Assessment:

Incorporates key financial indicators such as income, credit history, age, employment status, and dependents, providing a holistic solution for lenders and borrowers to make more informed lending decisions.



Motivation

Credit Approval Prediction seeks to rectify loan access hurdles stemming from overlooked factors like age and employment status, aiming to bridge disparities in approvals through comprehensive data utilization. By employing innovative data science, it strives to democratize loan access, fostering transparency and equity for all borrowers, especially those historically underserved.



Comprehensive Solution

Provides a holistic solution for both lenders and borrowers by analyzing various factors affecting loan approvals.



Benefits for Lenders

Enhances decision-making accuracy, reduces risks associated with loan defaults, and improves overall efficiency in the lending process.

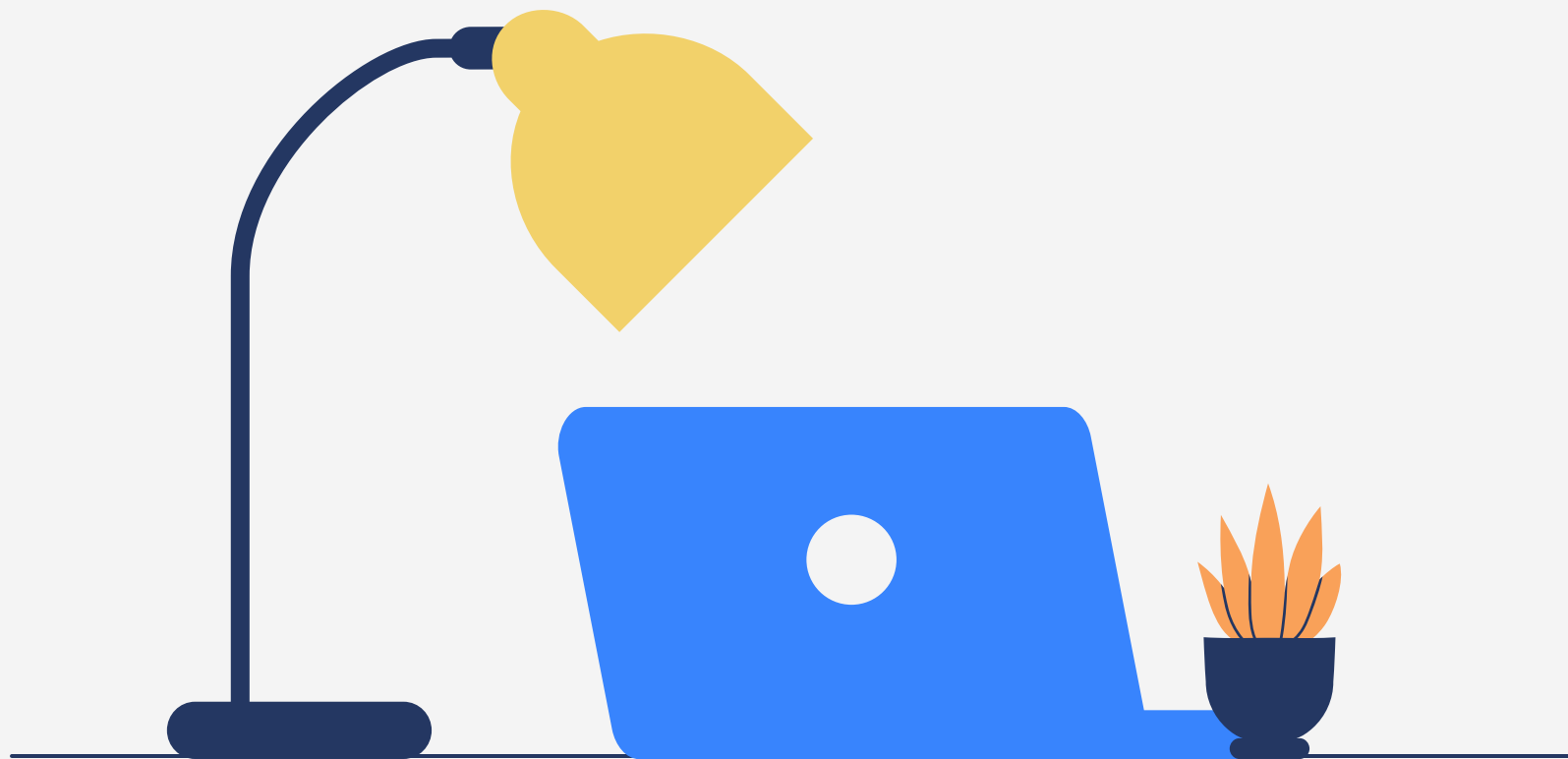


Benefits for Borrowers

Increases transparency in loan approval processes, potentially leading to fairer evaluations and greater access to credit for eligible borrowers.

Implementation

CAP operates through a systematic process of data preprocessing, feature engineering, and machine learning model deployment to provide accurate insights into loan-related outcomes.



✕ Data Preprocessing

Clean and preprocess the dataset by handling missing values, encoding categorical variables, and scaling numerical features to ensure data consistency.

✕ Feature Engineering

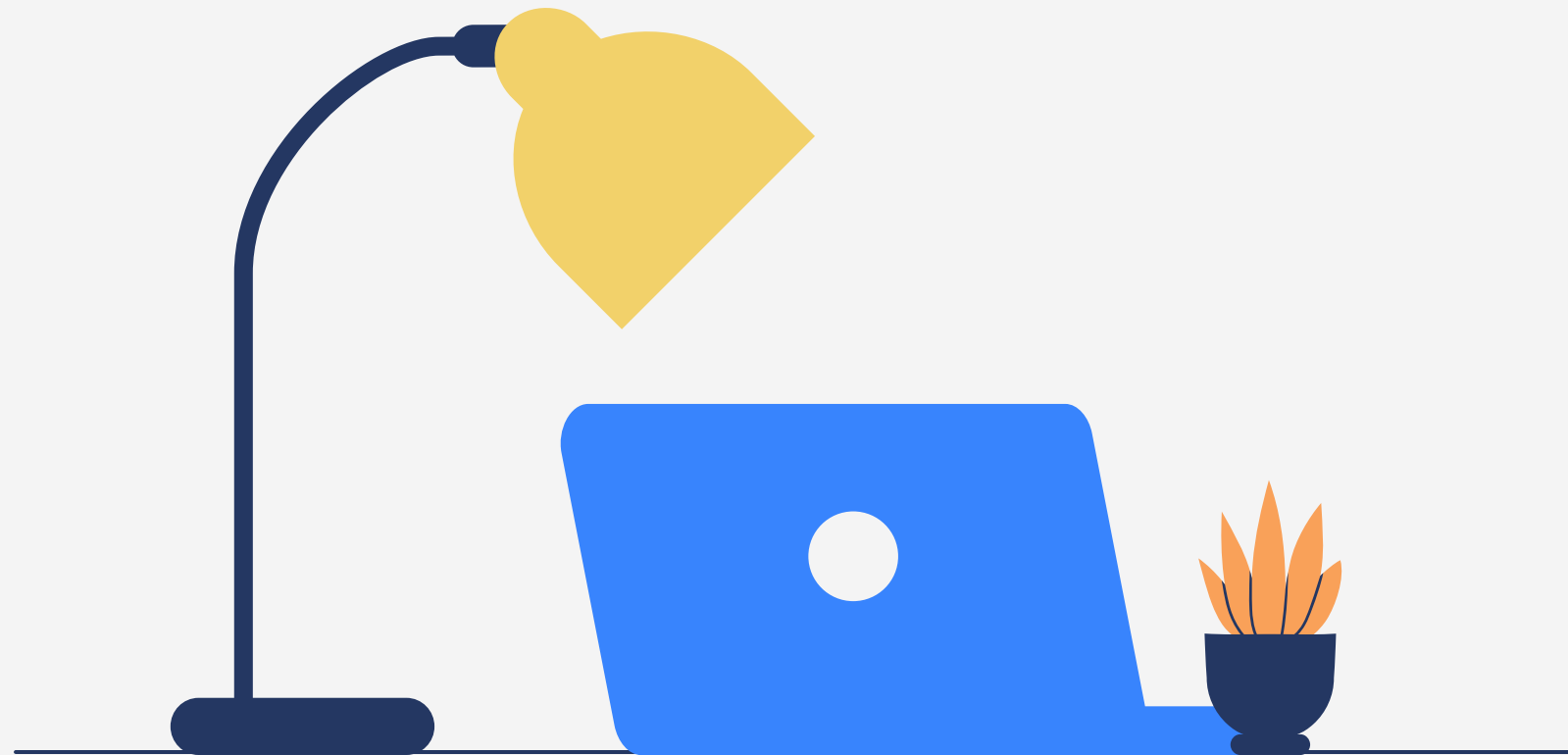
Extract key insights and relevant features such as income, taxes, and job status from the dataset.

✕ Model Selection

Choose suitable machine learning algorithms, including regression for predicting loan amounts and classification for determining loan approval, with potential utilization of ensemble methods for enhanced performance.

Implementation

Through this technical process, CAP provides answers to critical questions in lending, including predicting loan amounts, calculating interest rates, and determining loan approval probabilities.



✕ Model Training

Train selected models using historical loan data to learn patterns and relationships, facilitating accurate predictions.

✕ Model Evaluation

Assess model performance using metrics like accuracy, precision, recall, and F1-score to ensure reliable predictions.

✕ Monitoring and Maintenance

Continuously monitor and update model performance, incorporating new data and fine-tuning parameters to adapt to changing patterns and business requirements.

Dataset

We are currently planning on using a dataset that we acquired from Kaggle.

It includes information such as income, education, cibil score, assets value etc..

We preprocessed the dataset by removing NAN values, changed object data types to integers (One hot encoding).

Columns

121

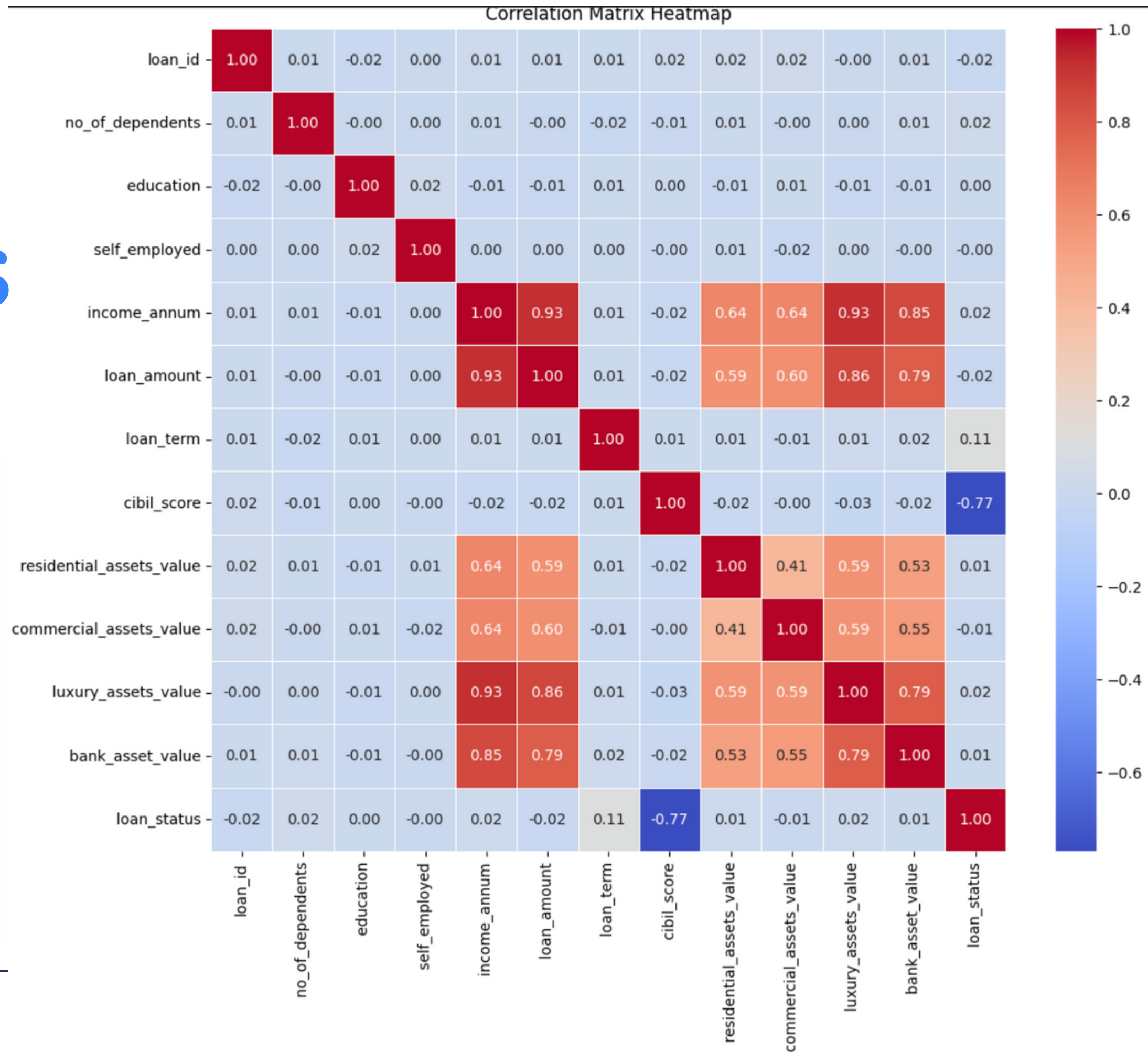
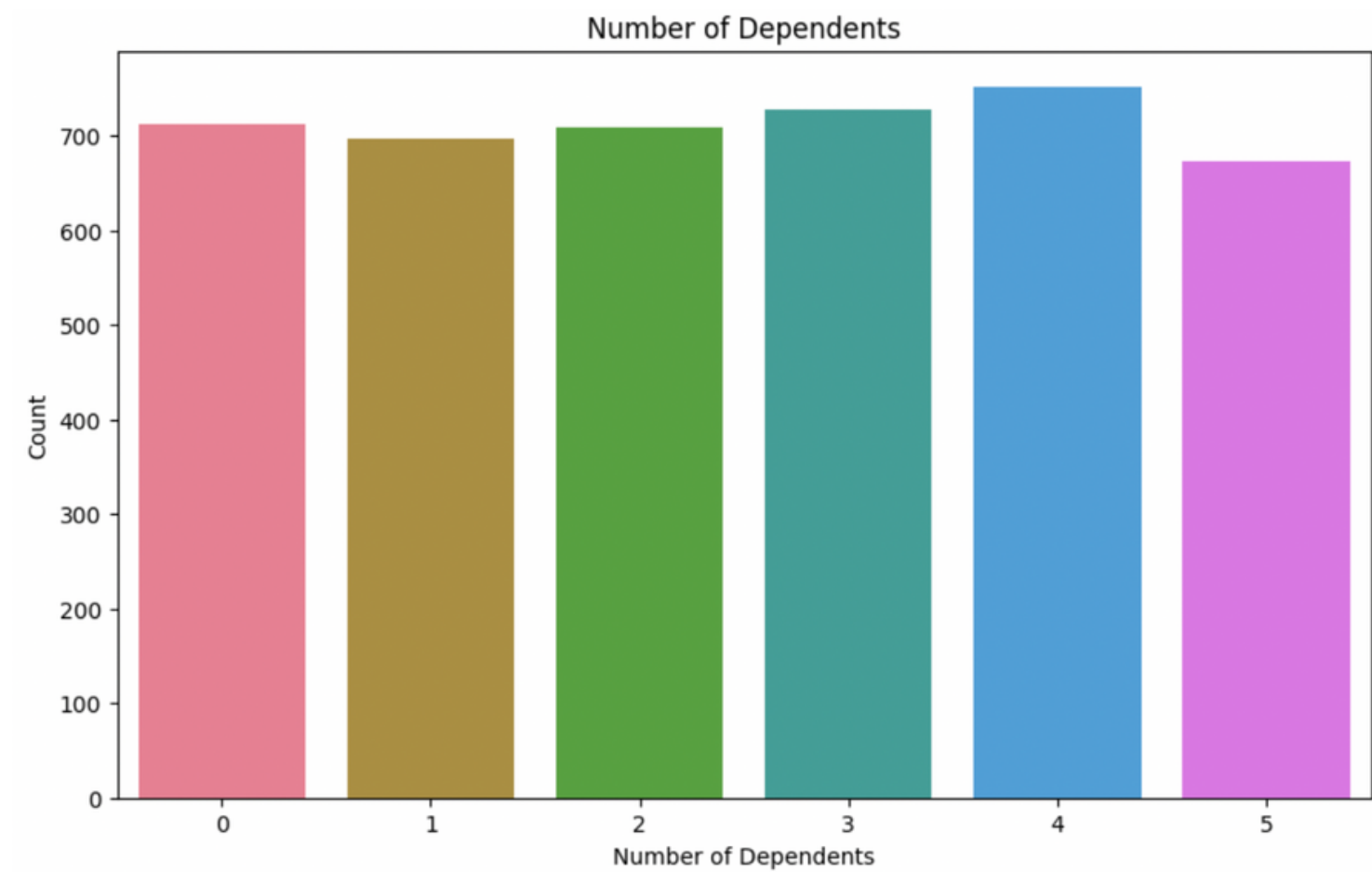
Rows

48000

Website

<https://www.kaggle.com/competitions/home-credit-default-risk/data>

Heatmap and Visualizations





Challenges

01

Ethical Considerations

If machine learning models are not properly constructed and managed, they may unintentionally reinforce or even worsen biases.

02

Scaling and Performance

Making sure the system can manage different loan application volumes without sacrificing accuracy or speed.

03

Adherence to Regulations

1. Respecting financial rules and policies with regard to loan approvals. Using new technology, like as machine learning, requires navigating complex regulatory environments.

04

Security and Privacy of Data

Ensuring the confidentiality and integrity of applicants' sensitive financial data. The use of personal financial data raises concerns about privacy and data security.

Conclusion

By leveraging diverse financial indicators and employing innovative data science techniques, Credit Approval Prediction aims to democratize access to loans and promote transparency and equity in the lending industry. A systematic approach to model development and maintenance , the initiative is poised to enhance loan accessibility, foster financial inclusion and mitigate disparities in loan approvals for borrowers, including those traditionally underserved by the lending industry.



Thank You



Data Dream Team

RISHIKA SRIVASTAVA

G32604671

SHRESTA VEERAMANENI

G27685412

SAKSHI AGRAWAL

G22915710

POOJA SRINIVASAN

G33105018