Swipe Right for Approval: Unleashing Machine Learning Magic for Credit Card Predictions using python !

Technology used

Pandas
- Data analysis library for structured data.
- Used for data cleaning, preprocessing, and feature engineering.

NumPy
- Numerical computing library for arrays.
- Helps in mathematical computations and data transformations.

Seaborn
- Statistical visualization library built on Matplotlib.
- Used for creating histograms, box plots, and correlation matrices.

Matplotlib
- Plotting library for data visualization.
- Helps in visualizing trends, distributions, and model performance.

Scikit-Learn
- Machine learning library for classification and regression.
- Used for model training, evaluation, and feature selection.

Imbalanced-Learn
- Library for handling imbalanced datasets.
- Uses RandomOverSampler to balance data and improve predictions.

XGBoost
- High-performance gradient boosting library.
- Enhances prediction accuracy and efficiently handles large datasets.
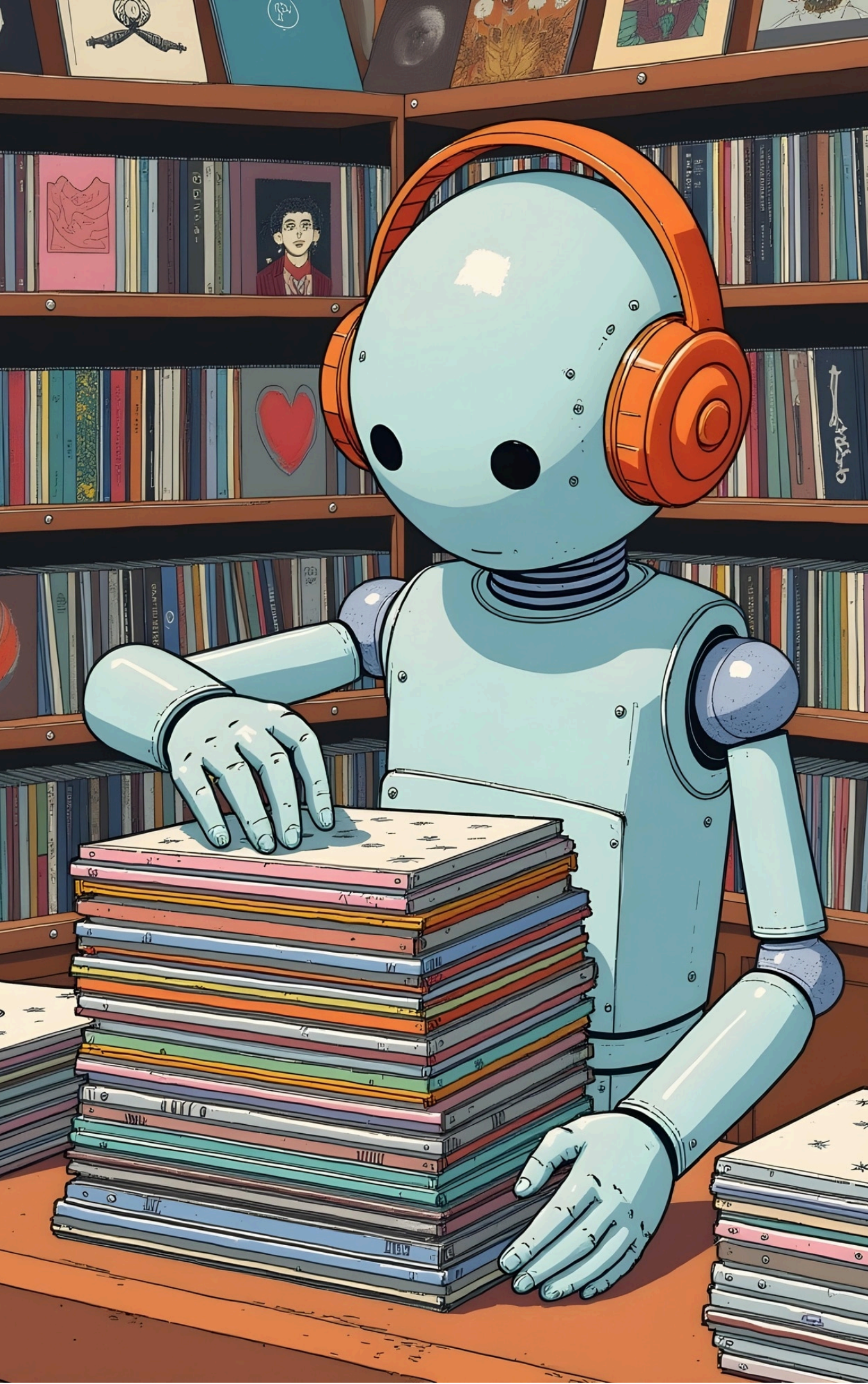
FEATURES

Data Preprocessing :
* Handles missing values, categorical data encoding, and feature scaling.
* Uses Pandas and Scikit-Learn for data transformation.
* Ensures data is clean and suitable for machine learning models.

Feature Selection

- Identifies key attributes that influence credit approval decisions.

- Uses RandomForest feature importance to select the most relevant features.

- Helps improve model accuracy by reducing unnecessary variables.
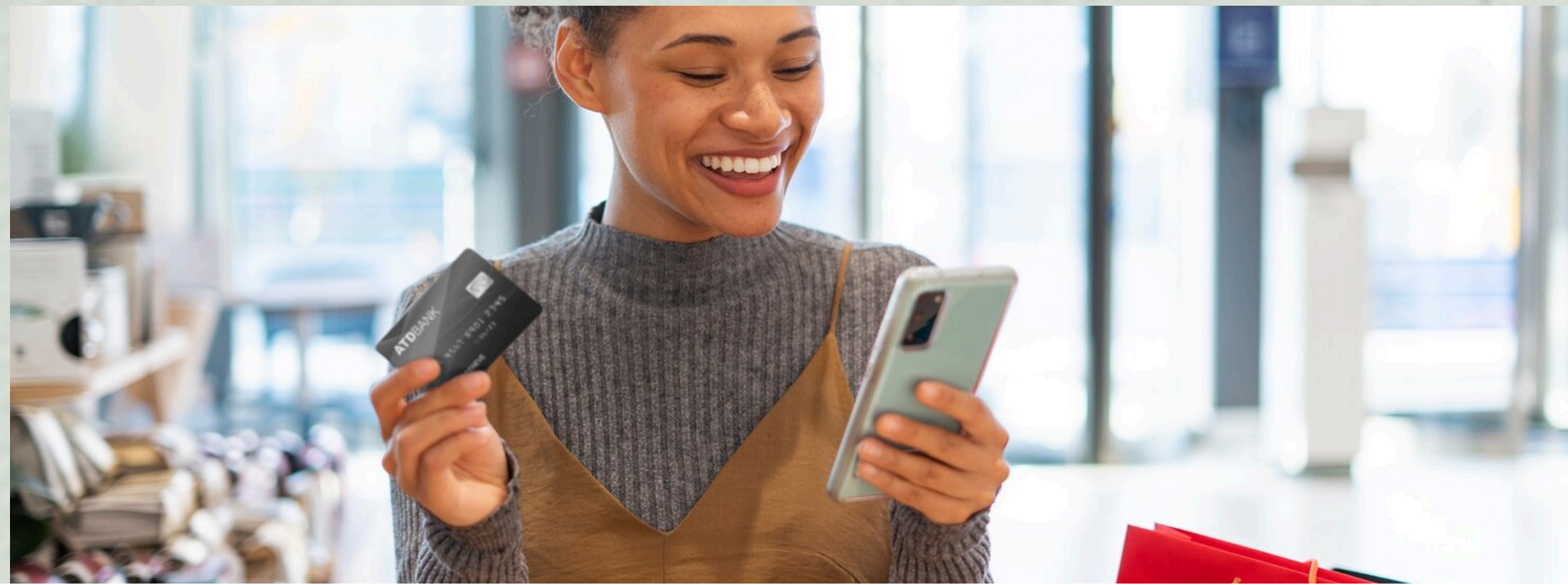
Multi–Model Comparison

♦   Compares different machine learning models like Logistic Regression, Decision Tree, Random Forest, and XGBoost.

♦   Evaluates models based on accuracy, performance, and efficiency.

♦   Helps in selecting the best algorithm for credit approval prediction.
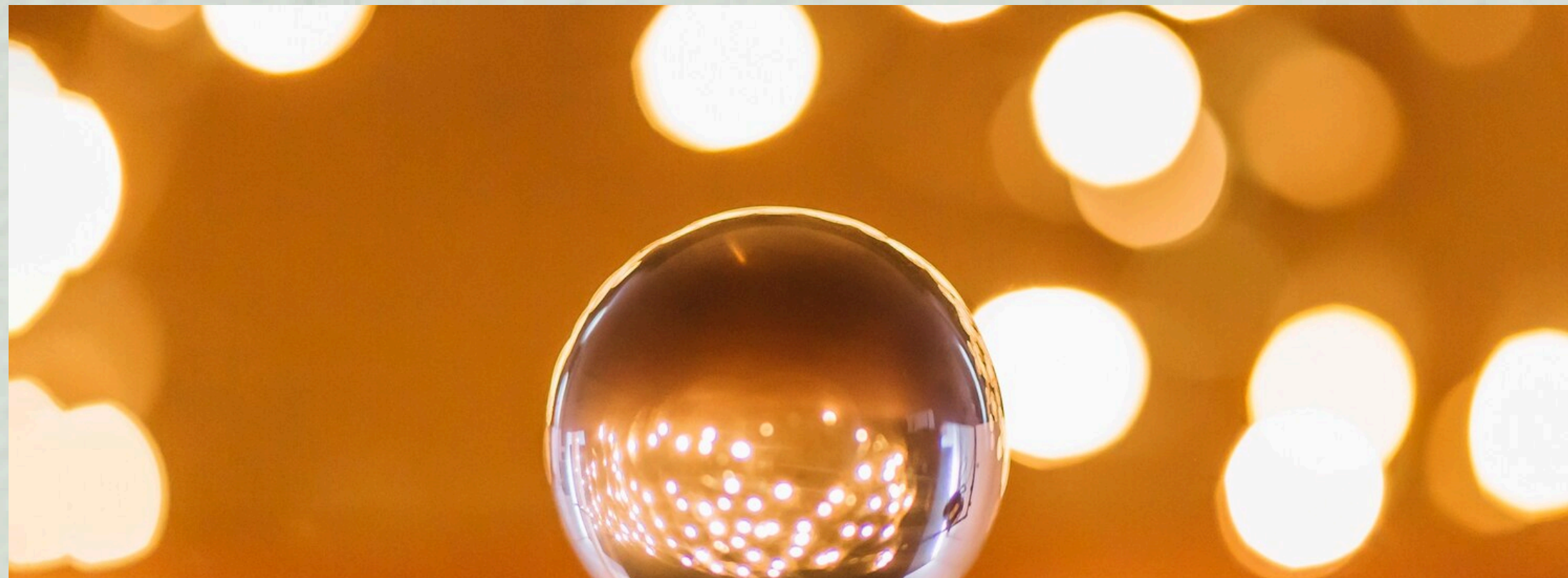
Interactive Predictions

- Allows users to input applicant details such as income and credit history.

- Predicts approval status using the trained model in real-time.

Fairness Analysis

- Analyzes model predictions for potential bias in demographic groups.
- Uses Seaborn bar plots to visualize approval rates across different age and employment groups.
- Ensures fair and unbiased predictions in the credit approval process

Thanks!

Do you have any questions?

THANK YOU
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