Credit Default Prediction Using XGBoost and SHAP

Project Overview

This project focuseson prdicting the likelihoucl of credit default andal) using a tree-based ensernble model (XGBoost). Eppthesias:ess model explaina-bility through SHAP (SHapley Additive ePlanations), helping transialec technical results into actionable.

Objectives

- Build a binary classification model to predict credit default.
- Analyzo global and local feature importance using SHAP,
- Translate SHAP results into clear business insights.

Tech Stack

- Python, Laandas, numpy, xgboost, shap, sc
- Libraries: panıdas, numpy, xgboost, shap, socıckiti-learn, matplotilb, seaborn

Tasks Completed

- Cleaned and preprocessed the dataset.
- Trained and tuned an XGBoost model for default prediction.
- Evaluated performance using AUC precision, recall, and F1—score
- Used SHAP to compute and visualize global teature importance.
- Performed local SHAP analysis on 3 individual applicants (high-risk, risk, low-risk).
- Synthesized findings into a strategic commentary for credit policy adjustment.

Deliverables

- ✅ Clean, execuble Python code
- ✅ Global SHAP summary plot
- ✅ Three local SHAP force plob with textual explanations
- ✅ Strategic commentary with data-driven policy suggestions

How to Run

- 1. Clone this repp
- 2. Install requirements:

```
pip install —r reeutrements.txt
```

- 3. Run `main,pyor notebook.ipyb` for full ánalysis

Author

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