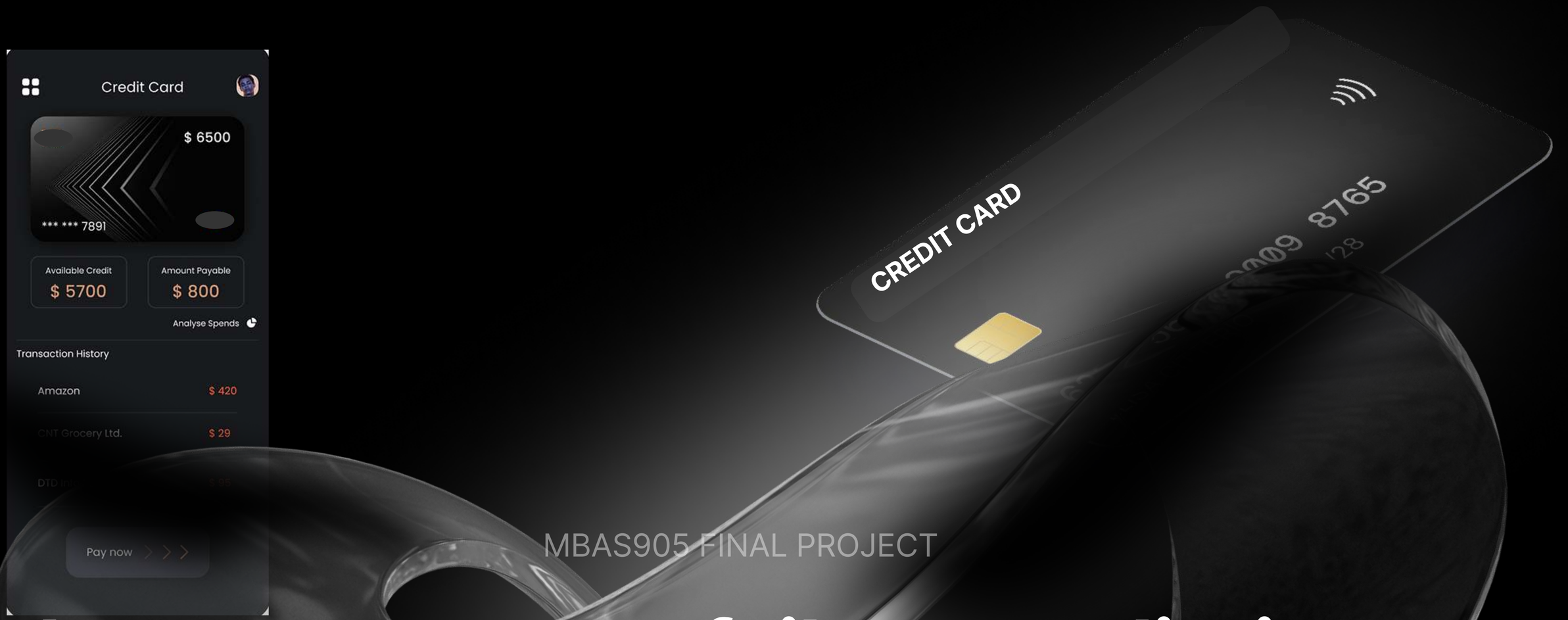


MBAS905 FINAL PROJECT

Loan repayment failure prediction using app behavior data

Anika Dzhkha, UOWD, June 2025

Agenda

1 Business Understanding

2 Data Understanding

3 Model Selection

4 Results Evaluation

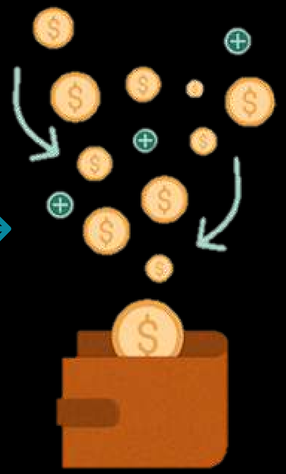
Business Understanding

Which behavioral/app interaction variables are the most predictable of **repayment overdue**?

Credit risk

user

loan



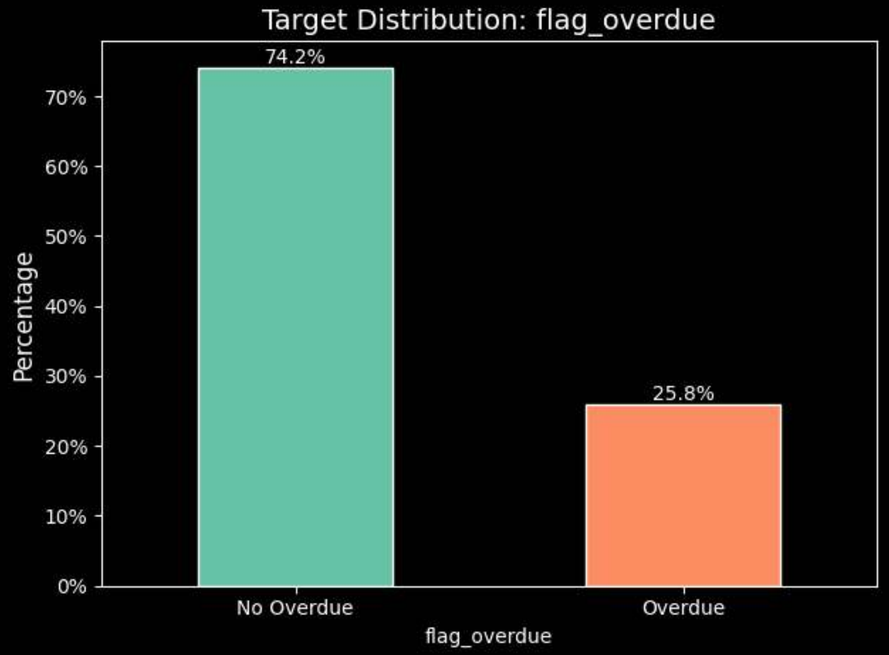
payback

failed to pay back in time

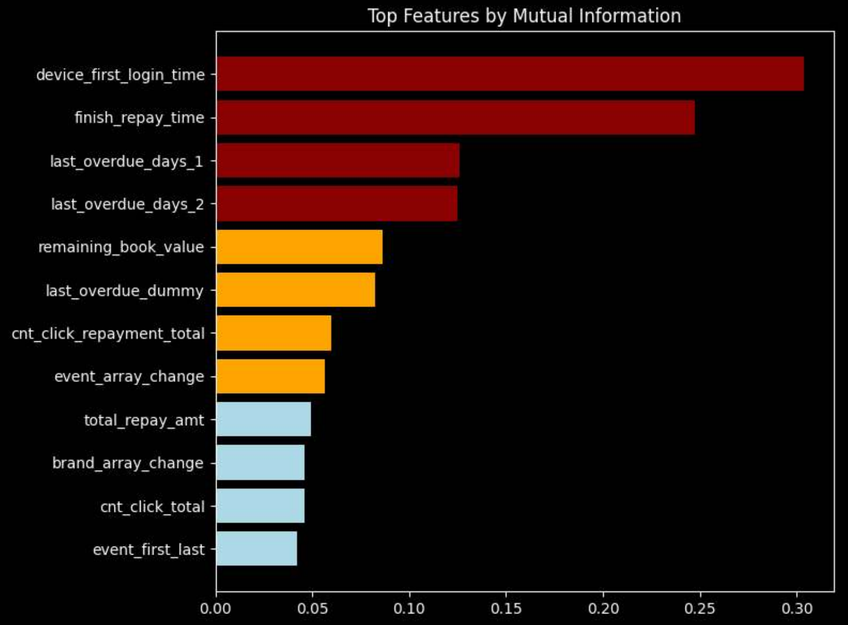
Data Understanding

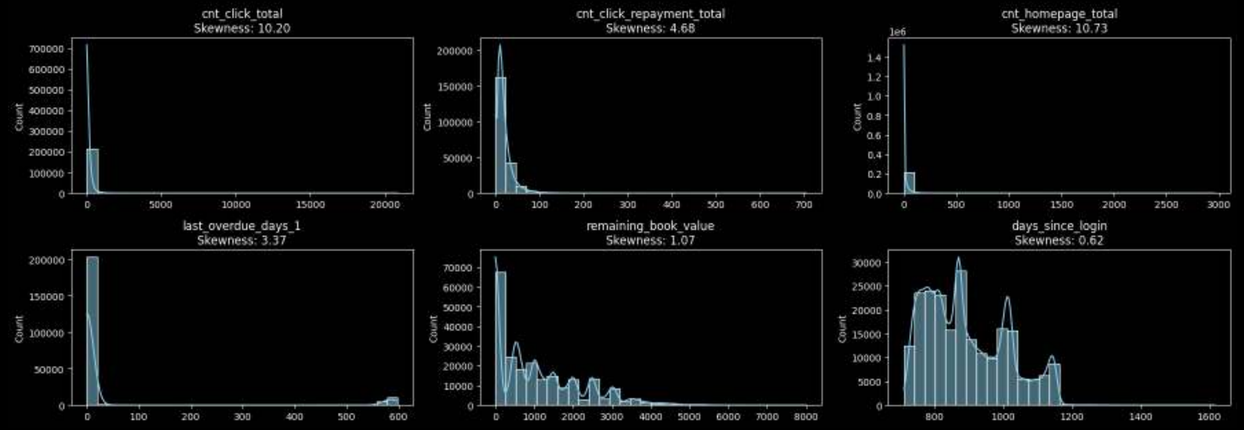
Variable Selection and Exploration

Target variable is imbalanced ⇒ class-weight adjustment

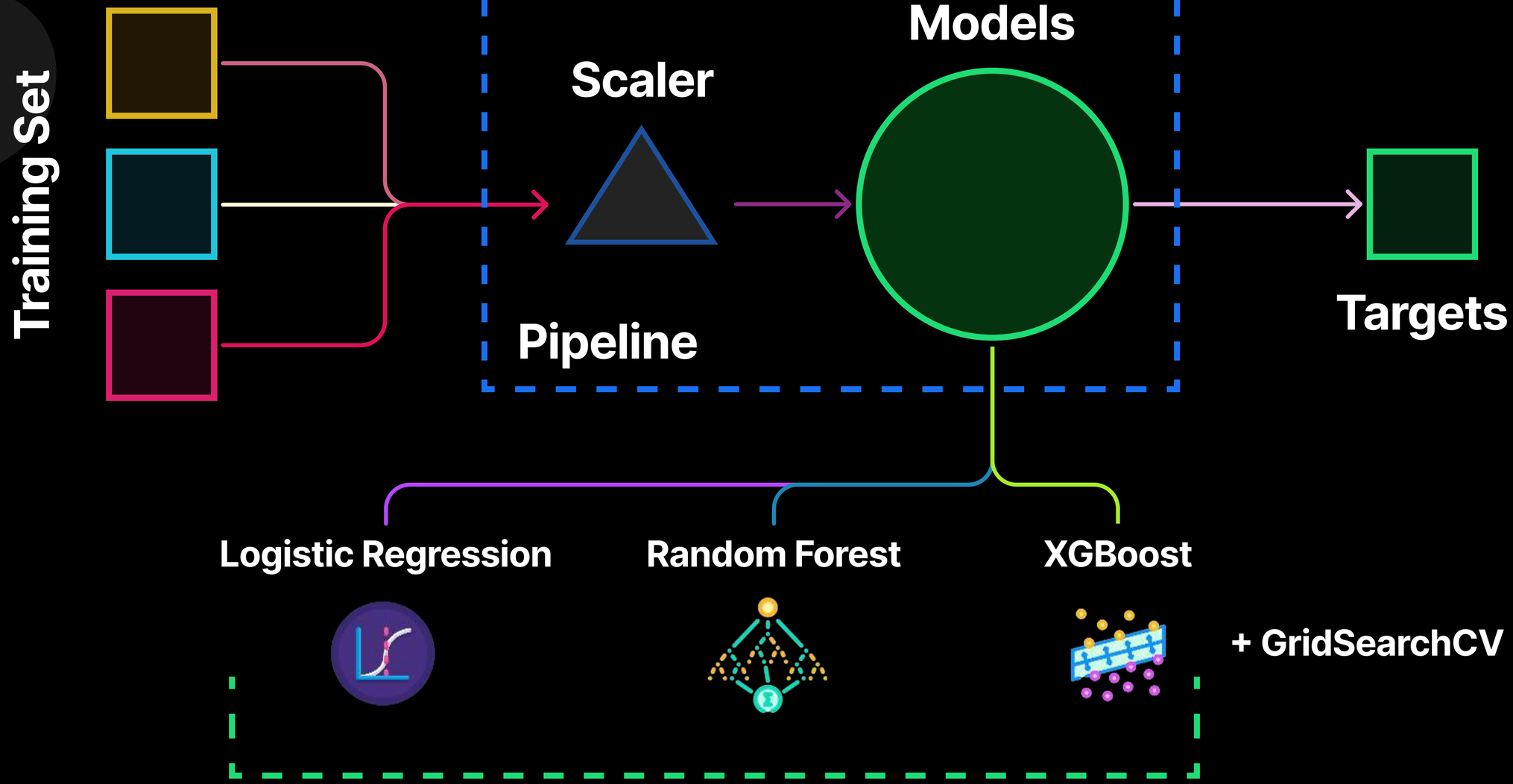


Selecting features out of 84:
1) MI score for features
2)Check skewness
3)Apply log-transformations
Selected features = 6 (transformed into 8)





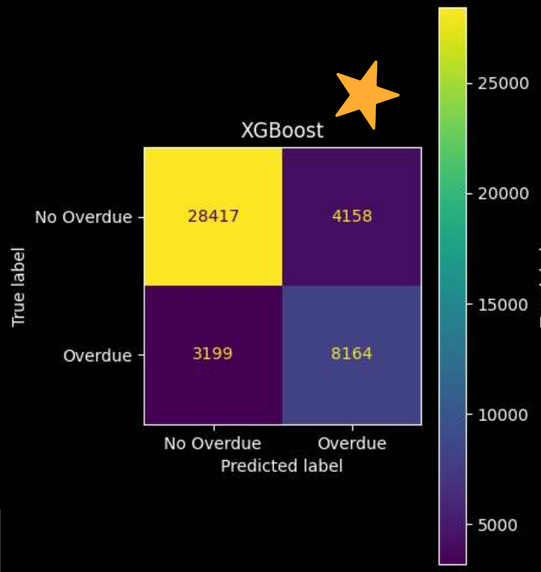
Model Selection

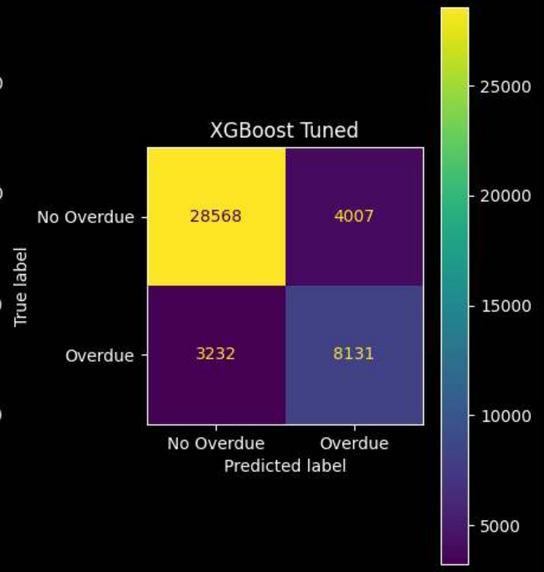


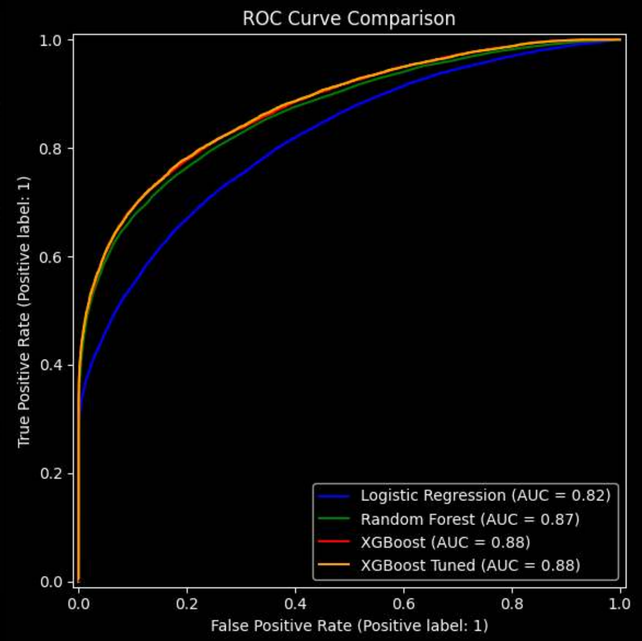
Results Evaluation

2

XGBoost





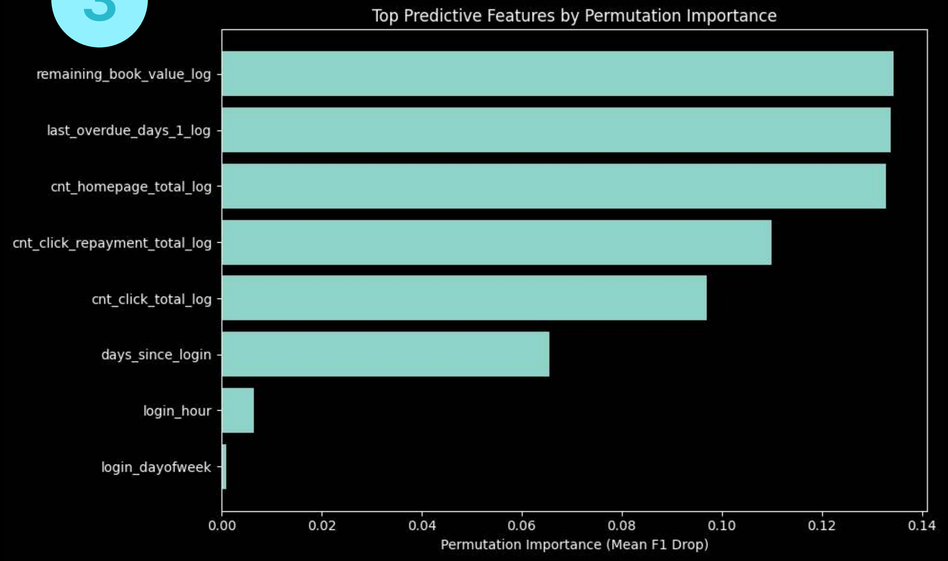


1

XGBoost_tuned

Model	Accuracy	F1 Score	ROC AUC
Logistic Regression	0.781123	0.600374	0.816831
Random Forest	**0.858869**	0.667881	0.867635
XGBoost	0.832560	0.689381	0.877089
XGBoost_tuned	**0.835245**	**0.691971**	**0.878048**

3



The **outstanding value**, **past overdue behavior** and **in-app behavior** (such as homepage and repayment page visits) are strong indicators of credit risk. Also **total click activity** and **recency** of app usage are meaningful predictors

THANK YOU FOR LISTENING!

Q&A SESSION