

A close-up photograph of a person's hands in a business suit. The left hand holds a thick stack of US dollar bills, fanned out slightly. The right hand holds a black pen, poised to sign a document. In the background, a laptop keyboard is visible on the left, and various papers and documents are spread across a wooden desk. The overall scene suggests a financial transaction or loan agreement.

Avoiding Delinquency in Loan Payments

Your personal financial friend

Binqi Shen

Inspiration

1. Adverse consequences of late loan payments
 - Loan Borrowers: higher penalty fees, lower credit scores
 - Loan Lenders: fraud risk, default risk
2. Give prediction of whether a loan borrower with certain attributes faces loan delinquency risks

Motivation

1. *Promote* a financially healthier loan market
2. *Provide guidance to* loan borrowers and loan lenders



DEMO



<http://loana-publi-d0j8epx8xjk5-976363701.us-east-1.elb.amazonaws.com/>

DATA

Kaggle Dataset

Credit Card Fraud Detection



Data Size

307511 Samples
of Loan Applications



Demographic Features

Age, Income, Family Status,
Education Level, Gender, etc.



Loan Features

Annuity Amount, Credit Amount, Price of the
Good for which the Loan was Given, etc.



Target Response

1: Client with at least ONE late payment
0: Client with NO late payments

MODEL & SUCCESS CRITERIA

Random Forest Classifier

Features:

Demographic & Loan Features

Predict:

- ❖ Probability of Loan Delinquency
- ❖ Class (1 or 0) → Recommendation



71%

AUC

Area Under Curve score works well
with imbalanced dataset
AUC > 70% → good performance



69%

CCR

69% of the observations
were correctly classified

INSIGHTS

DATA

Contract Type

Cash Loans are **9** times more popular than *Revolving Loans* in the dataset



Gender

Nearly $\frac{2}{3}$ of the applicants are *female* in the dataset



MODEL

Important Features

1. *Age*
2. Number of years in *current employment*



THANK YOU



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