Predicting off-charge loans for risk management in P2P lending market

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Advanced Methods in Big Data
Final Project Pitch

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Introduction

01 Context

- Lending Club is a peer-to-peer lending company
- Headquartered in San Francisco, California
- Online lending platform

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02 Study

- Build classification models to predict loan defaulters based on the applicants' profiles

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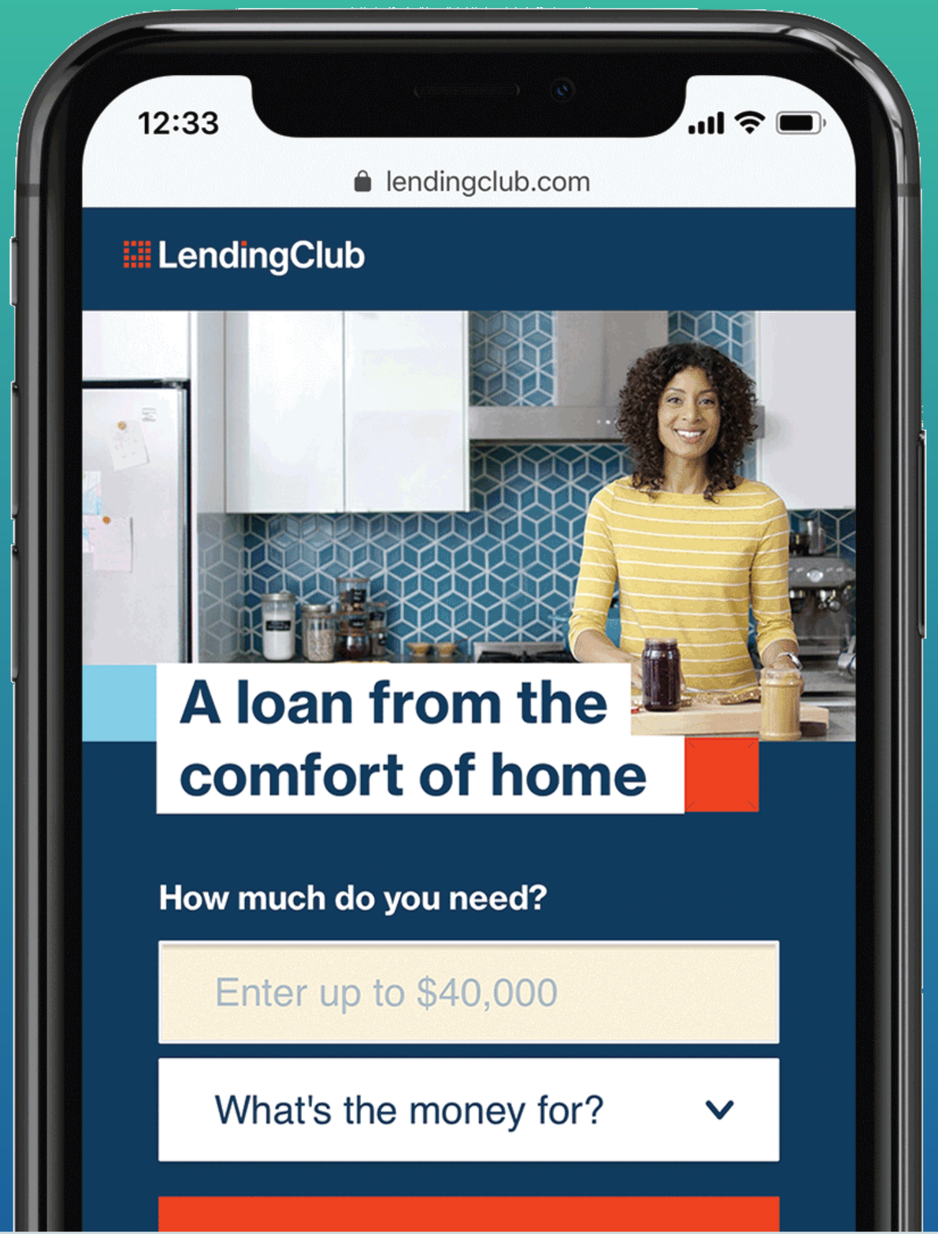
03 Objective

- Understand the driving factors behind loan default, i.e. the variables which are strong indicators of default

Source: lendingclub.com



Data Overview

Data Description

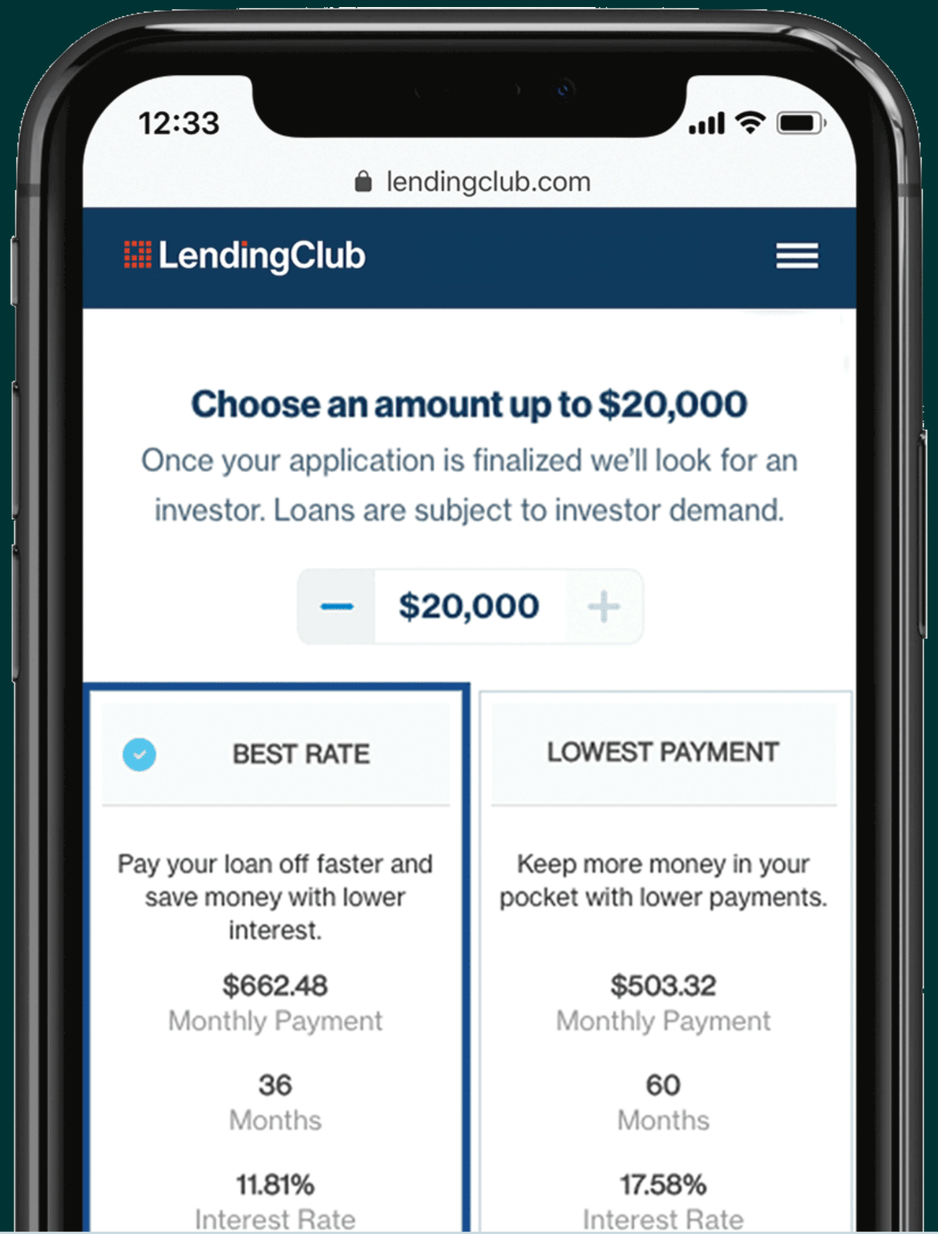
- Source of dataset: Kaggle[1]
- The dataset contains
  - 396 030 observations
  - 27 features
    - Features related to the applicant (e.g., income)
    - Features related to loan characteristics (e.g., loan amount)

Exploratory Data Analysis

- 01 target variable: **Loan Status**
  - Fully paid: 80% # observations
  - Charged off: 20%
- Multicollinearity problem

[1] https://www.kaggle.com/code/faressayah/lending-club-loan-defaulters-prediction/data

Source: lendingclub.com



Next Steps

We are currently in the stage of Data Exploratory Analysis & Data Preprocessing. Hence, the below methods & techniques are suggestions and will be adapted if necessary.

Any recommendations from the Professors and colleagues are more than welcome!

Data Preprocessing

- Outlier Detection & Treatment:
  - Inter Quantile Range
  - Removing or Capping
- Imbalanced dataset Treatment:
  - Oversampling method: SMOTE-NC

Information Reduction

- Dealing with **Multicollinearity** problem
- Handling **high-dimensional** setup
  - Dimension reduction: Principal Component Analysis
  - Shrinkage: Lasso

Classification Models

- Statistical Model
  - Logistic Regression
- Machine Learning Models
  - Random Forest
  - Neural Networks
- Explainability with SHAP

Thank you!