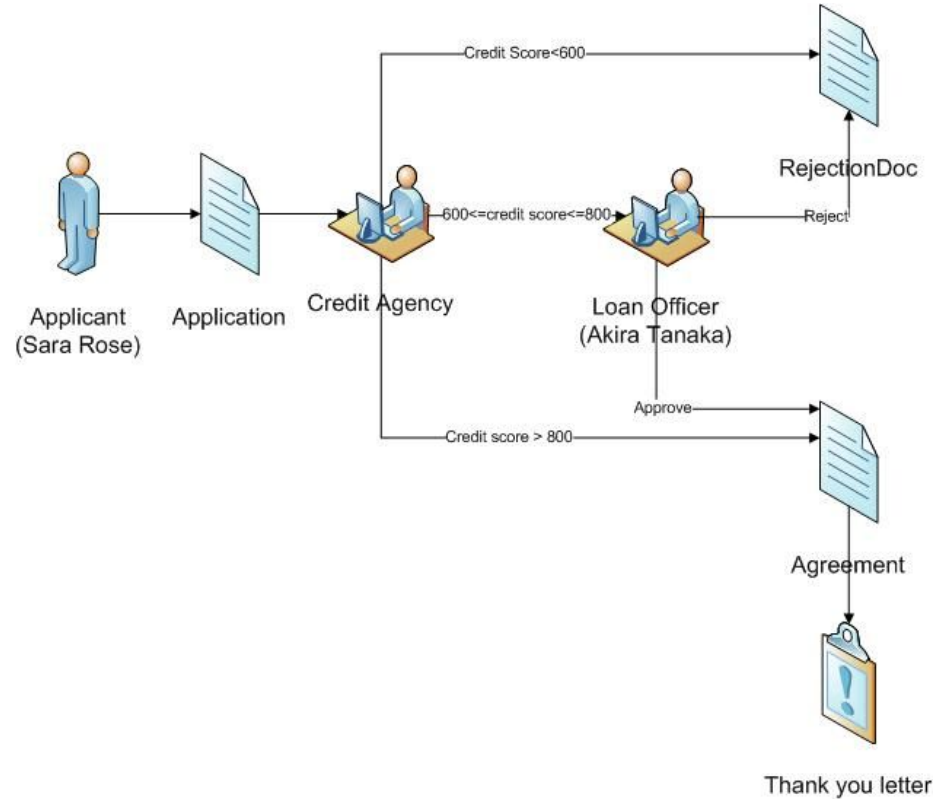# How to get a loan from Lending Club ?

Penny Pan 2018 metis

Objective

- Understand the important features

- Boost chance of getting a loan from lending club

Credit Score<600

RejectionDoc

Applicant (Sara Rose) → Application → Credit Agency

600<=credit score<=800

Loan Officer (Akira Tanaka)

Reject

Approve

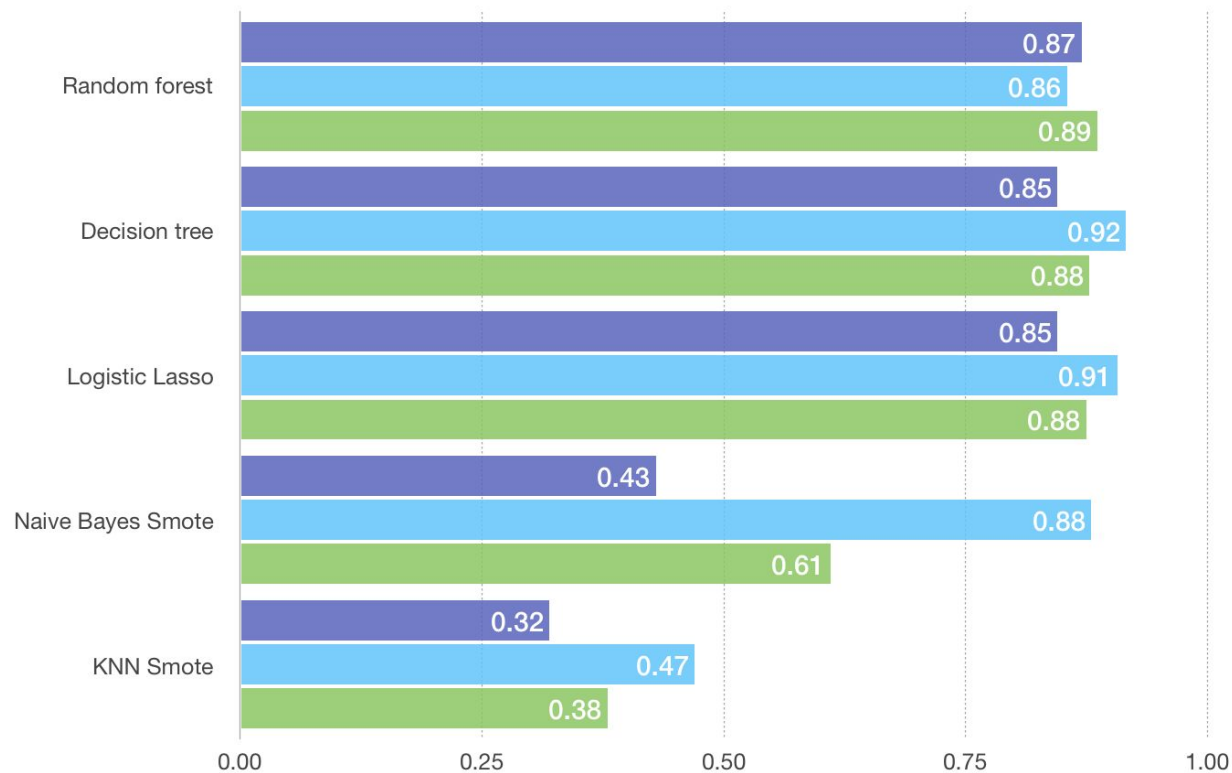Credit score > 800

Agreement

Thank you letter

Source

- Lending Club Statistics
- Range from 2015-2017
- Ratio of rejected : accepted 4 : 1
- 3000,000 observations

Features

- Credit Score (FICO)
- Debt to monthly income ratio (dti)
- Employment length
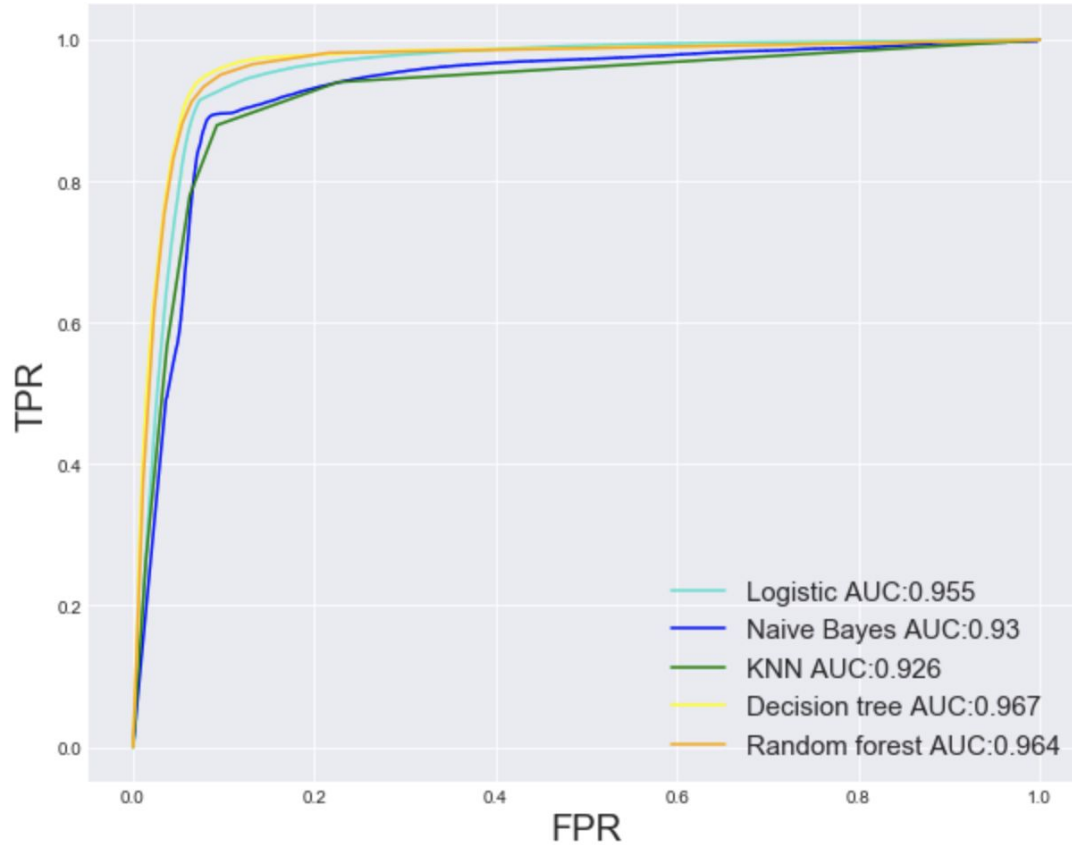- Loan purpose
- Loan amount
- Current Address

LendingClub

EDA

Lending Club uses DTI as part of its "risk modifiers" that help calculate a "loan grade" ranging from A1 to G5. The loan grade is mostly based on a consumer's FICO score, but is modified to take into account the DTI and the loan amount

Modeling

Random forest	Purple: 0.87, Blue: 0.86, Green: 0.89
Decision tree	Purple: 0.85, Blue: 0.92, Green: 0.88
Logistic Lasso	Purple: 0.85, Blue: 0.91, Green: 0.88
Naive Bayes Smote	Purple: 0.43, Blue: 0.88, Green: 0.61
KNN Smote	Purple: 0.32, Blue: 0.47, Green: 0.38

10 Kfolds Test Score

Purple: Precision
Blue   : Recall
Green : F1

Error Analysis

Top 10 Features of Random Forest
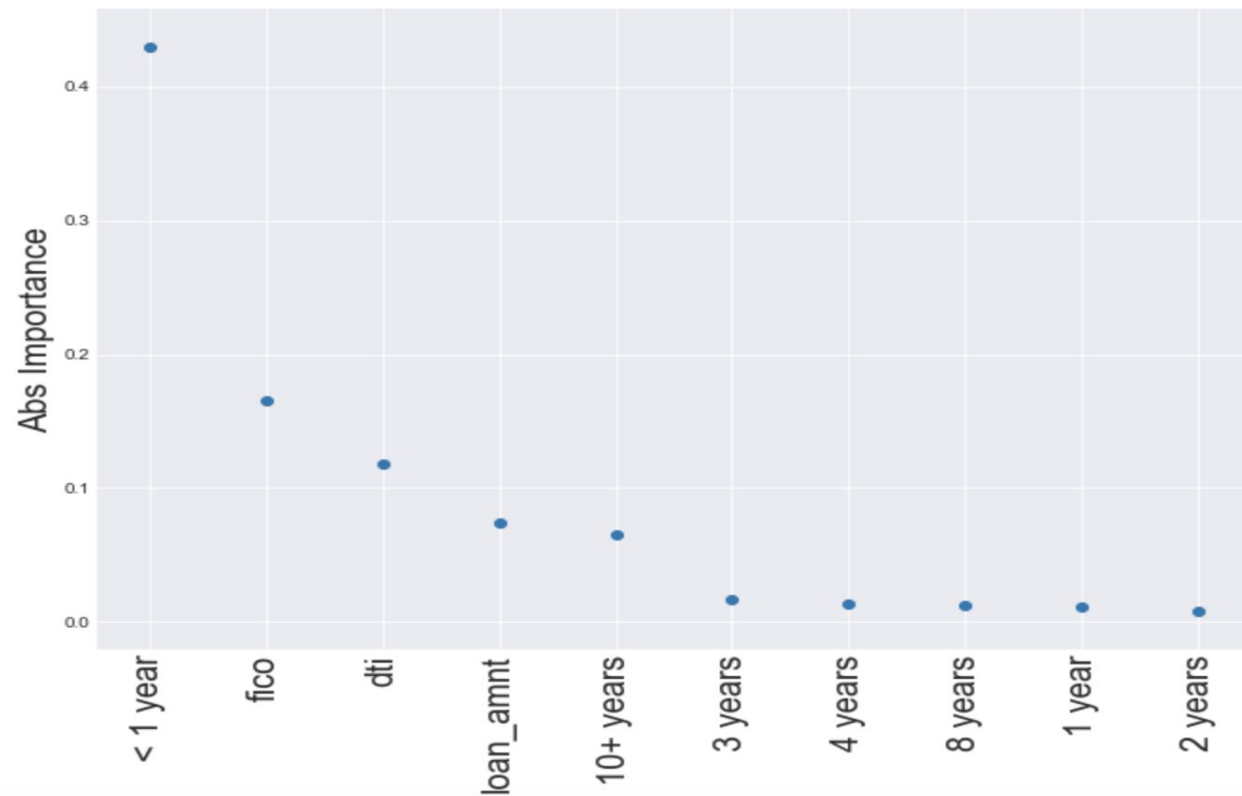
Web Application

Nice to See you

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

Find out

Get a Loan

Loan amount

Credit Score

Debt to income ratio in Percentage

Purpose

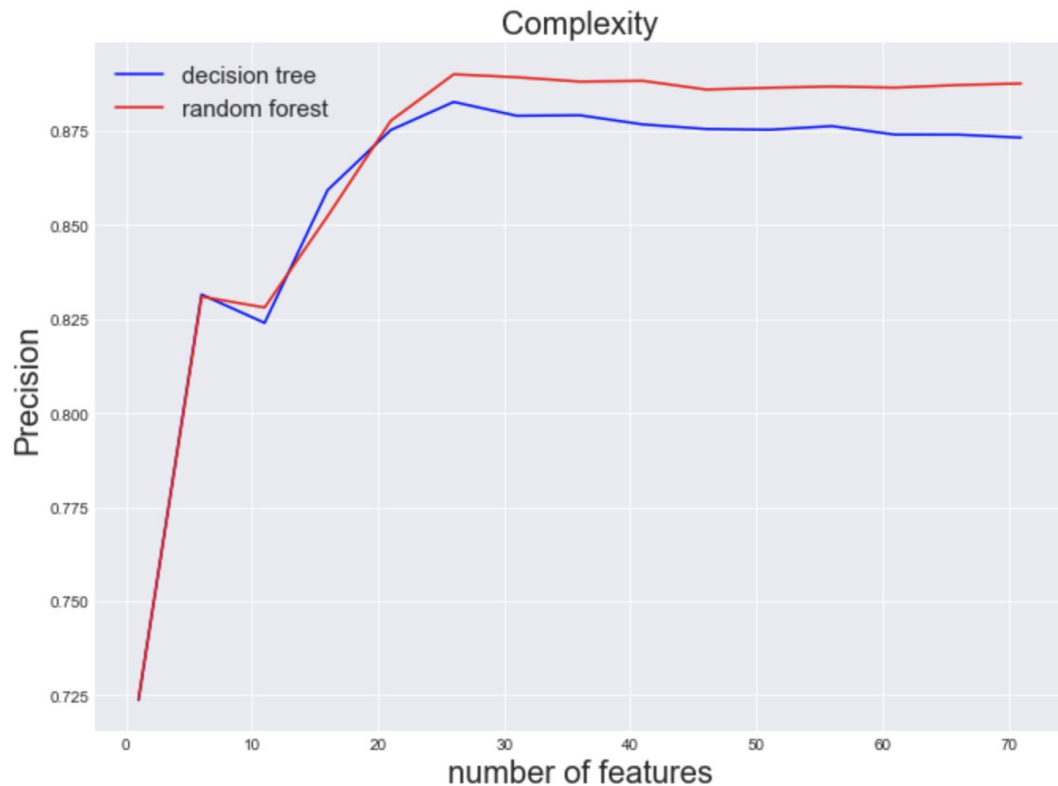How long have you been working ?
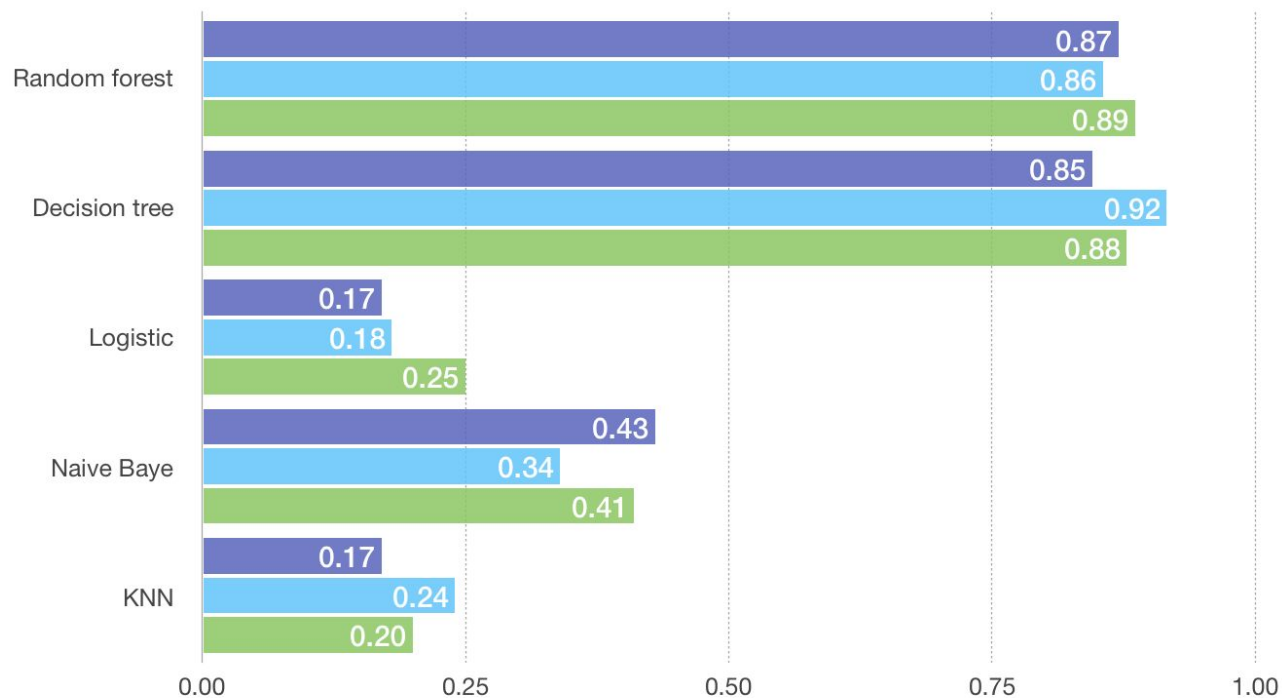
Where you currently live ?

Submit

Optimal Threshold

0.6

Improvements

- Overfitting problem
- Plot feature importance over the time (Time series)
- Predict interest rate

Thanks for watching

Unbalanced Dataset

Confusion Matrix Random Forest