

Prosper Lending Platform Interest Rate Analysis

What is Peer-to-Peer (P2P) Lending?

P2P is an online service where lenders and borrowers are matched together, to provide a loan to the borrower and a financial incentive to the lender through the loan interest. Prosper's lending platform is one of the more commonly used P2P services.

Project Goal

The project aims to develop an application that allows borrowers to predict their potential interest rate on the Prosper Lending Platform.

Dataset

The data used for the project, was released by Prosper for use by the general public. The dataset was anonymized before being released. Below is a summary of the dataset:

- 81 Total Features
- 10 Highly Predictive Features
- 113,937 Borrowers
- Interest Rate Range: 1% - 49.9%

Analysis

To provide accurate interest rate predictions, several models were trained and tested. For each model, grid search was used to test an array of variables to find the best combination of hyper-parameters. The gradient boosting model did much better than the other models. For ease of comparison, R^2 was the metric used to test and compare performances of each model.

Model Analysis Summary (R^2):

- Random Forest 0.3275
- ADA Boosting 0.3573
- Gradient Boosting 0.4882
- K Nearest Neighbors 0.4371

Application

The application provides an interface, which allows borrowers to enter information regarding their financial health and borrowing needs. The application uses this data to enter it into a trained gradient boosting model to predict the borrower's potential interest rate. The rate is then displayed to the borrower.