

# Loan Origination Prediction

## **i** Introduction

Loan approval is one of the most chaotic and tedious task where people go through a lot of troubles in arranging and organising their application documents. Even after such hectic arrangements, there still exists a tendency that their loan application might get rejected.



This case study showcases how Winjit's machine learning was adopted to develop a solution, to identify whether the loan of a person will be approved or not, saving a big amount of time before heading for the actual process.



## Customer

The client runs one of the biggest financial consultancy firms in the country. Various kinds of services like- financial advisory, asset management, loan application management, etc, are provided by the client to the customers. Now, the client wants to initiate a new service of loan application prediction through which a lot of time of the applicants can be saved if they don't meet the criteria.



## Requirement

To get the overall view of the scenario, Winjit Technologies Machine Learning team communicated with the client to understand the exact requirements. The team identified key requirements as:

- ▶ Identifying loan approval rates and stages of different financial institutions

- ▶ Domain knowledge on loan origination
- ▶ Creating dataset on one year of loan origination based on customer's demographic, credit history, previous loan applications, current credit score, etc.
- ▶ Predicting loan approval and suggesting relevant banks for application



## Challenges

Using machine learning to predict the approval of loan was a task full of challenges. One of the major challenge to achieve this was data acquisition from various sources. Data was available in abundance, regarding the customer's background, from various external sources but capturing the relevant data from those sources was a tough task.

Another challenge was incorporating seasonal factors in the developed algorithm for loan approval. External factors such as market and economic shifts which influences the rates of loan approval were also considered and marked in the developed machine learning algorithm.



## Solution

Loan origination prediction was achieved by the Winjit's Machine Learning team with the value addition of suggesting banks based on the approval. The softwares using which the solution was developed were R language, SQL server, Python and machine learning algorithms.

Dataset of all the loan origination requests in previous one year was created including customers background details like-

demographics, credit score, previous application details, credit history, etc. Using this dataset, Exaboost model was used for prediction.

R language was used for model training and Python was used for data collection. All the data was maintained using the SQL server.

For managing the backend of the solution, Node JS was used for handling the web and API.

Different stages of approval of distinct banks were kept in mind while designing the algorithm. With this information, the solution was able to display the suggested banks which the customer should approach with current financial portfolio.



## Achievements & Benefits

To Make prominent detection of business, following data were captured which can be exported and analysed through Winjit's offerings.

- ▶ Accuracy level of 80% was achieved for predicting the approval or rejection of a loan
- ▶ The solution was able to deliver the results within less than a second
- ▶ With the prediction of loan approval, a whole lot of time was saved both of the customers and of the bank management as well
- ▶ After approval, the banks which could be approached by a customer with present application stats, were also suggested by the solution.
- ▶ The solution helped the client in starting a new service, which helped the client to increase the customer footfall by over 20%.



## Conclusion

Loan origination prediction using Winjit's machine learning algorithm was successfully achieved. The dedicated solution which was made for a single client was widely accepted by the entire financial industry as it saved a significant amount of time of every person involved in the loan approval chain.

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