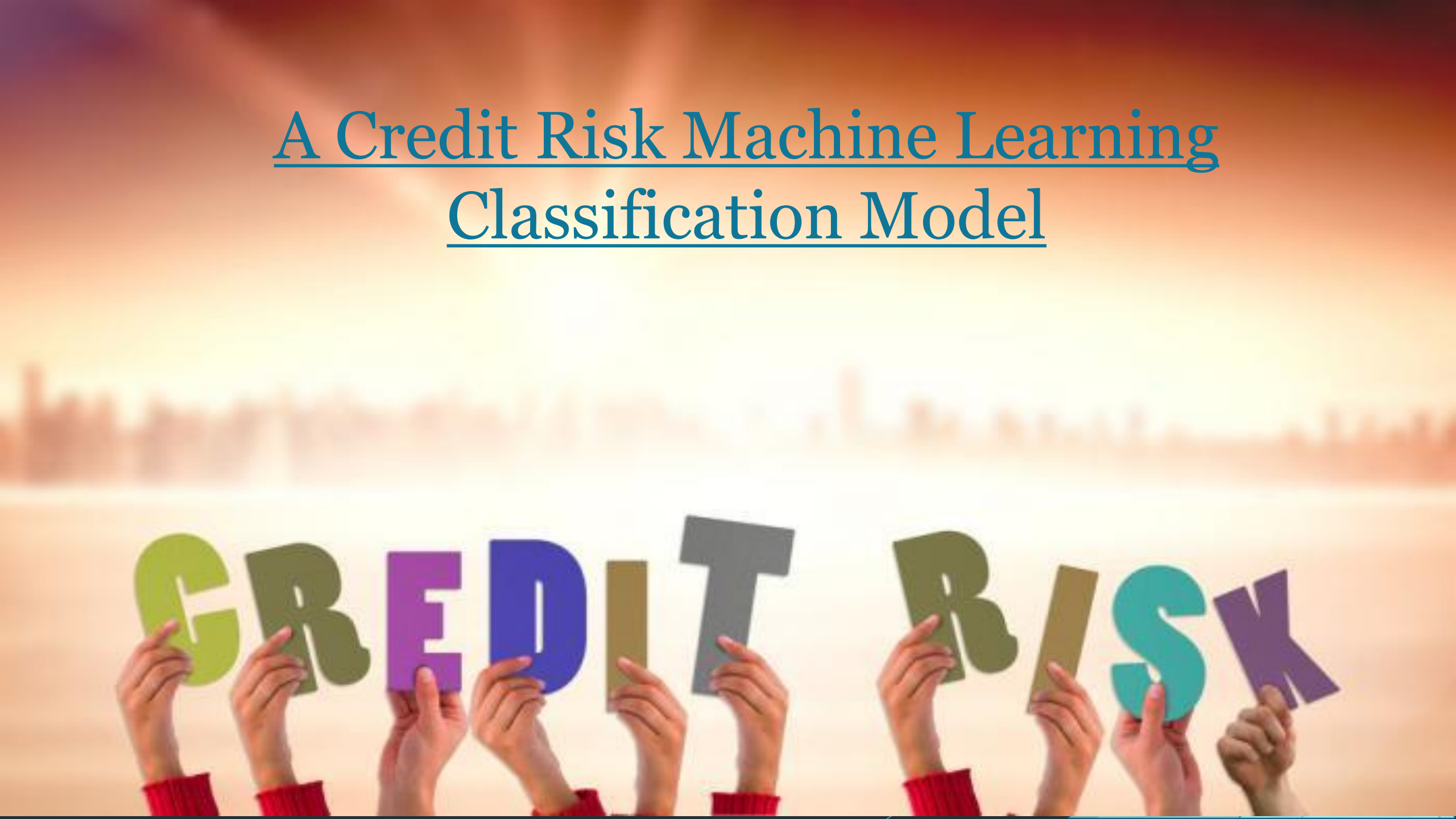
A Credit Risk Machine Learning Classification Model



Problem

- How to minimize default Rates on personal loans?

The Dataset

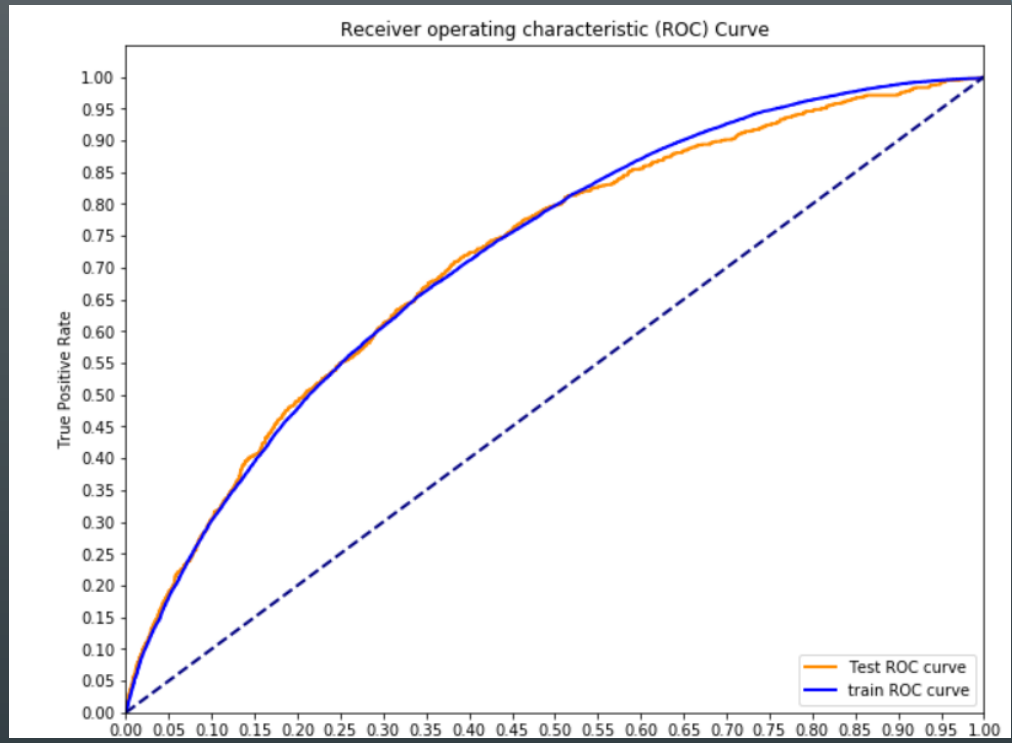
- Lending Tree borrowers data
- Conducted between 2007 and 2011
- 42500 rows x 52 columns
- Available on lendingtree.com

Data Preparation Steps

- Handling missing Values
- Eliminating columns leaking information from the future
- Synthetic Minority Oversampling (SMOT) for class imbalance

Evaluation Metric

- Accuracy not a good indicator
- True positive rate (recall)
- False positive rate

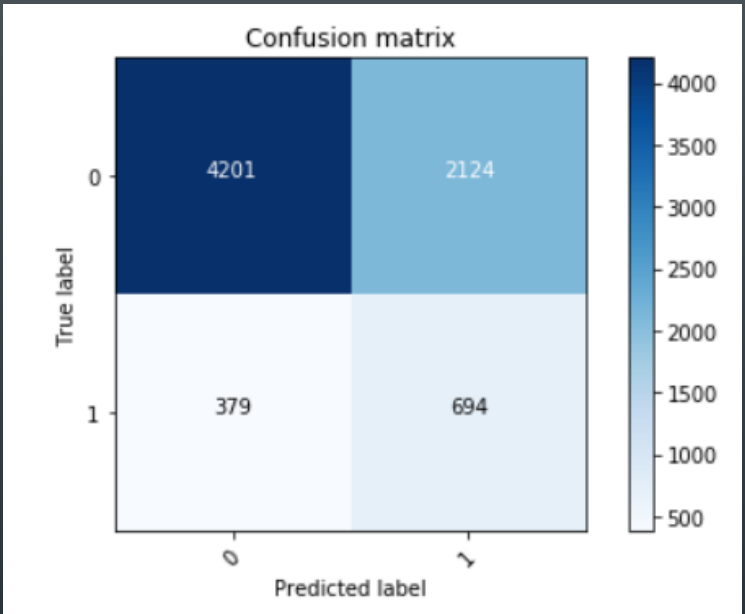


Different Classification Models

- Logistic Regression
- Support Vector Machine
- Random Forest
- XGBoost

Which Model Did Best ?

- Logistic regression provided the best results



Conclusion

- We can predict 65% of the defaults that were initially approved by Lending Tree screening process
- Drawback : the model still rejects a significant portion of the applicants who were not going to default

Next Steps

- Improve gridsearch to optimize random forest and XGBoost model performance
- Try different approaches to handling class imbalance
- Determine levels of interest rates insuring profitability despites undetected defaults