

# SyriaTel Customer Churn Prediction





# Introduction

Customer churn is a major threat as it :

1. Reduces revenue
2. Raises acquisition costs

Minimizing it is therefore important for sustaining profitability and customer loyalty.





# Business Understanding Business Problem

SyriaTel is experiencing a high rate of customer churn, leading to significant revenue loss and reduced competitiveness.

Without clear insight into which customers are most at risk and the factors driving their decisions, the company struggles to implement effective retention strategies.



# Data Understanding

The SyriaTel Customer Churn dataset is used for the project. The dataset includes essential customer churn attributes such as:

- State and Area code.
- International and Voice Mail Plans.
- Call rates
- Customer Service calls



# Data Cleaning

Basic data cleaning is done to ensure the dataset is consistent and ready for modeling.

The process involves:

Checking for and handling null values

Identifying and removing duplicate rows

Standardizing column names by capitalizing words and separating them with underscores





# Modelling

Building predictive models to classify customer churn using the features in the dataset.

Five models are trained and evaluated:

Logistic Regression.

Decision Tree

Random Forest

K-Nearest Neighbors (KNN)

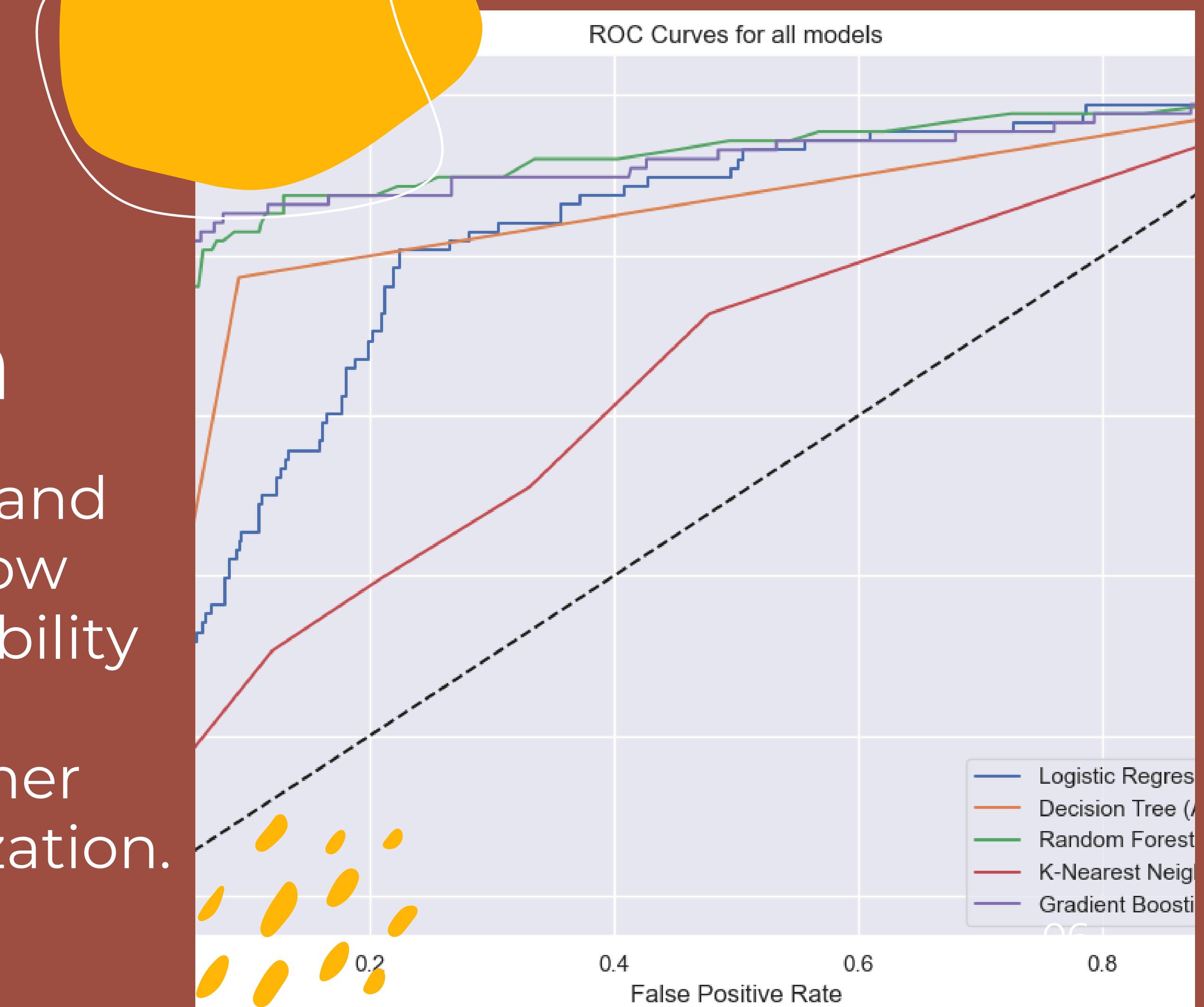
Gradient Boosting Classifier



# Model Evaluation

Gradient Boosting and Random Forest show better diagnostic ability and are the best candidates for further tuning and optimization.

ROC Curves for all models



# Model Comparison

Gradient Boosting achieved the best overall results especially in recall and F1 for churners; class 1.

Random Forest provided solid overall accuracy but underperformed on minority class recall.

Gradient Boosting is therefore selected as the final best model.



# Conclusion

Among the models tested, the Gradient Boosting Classifier provided the best balance of performance.

This means it is the most effective at correctly identifying customers likely to churn.



# Recommendations

1. Use Gradient Boosting as the main churn prediction model.
2. Use churn predictions to guide targeted retention strategies.
3. Model insights to be combined with feature analysis.
4. Frequently re-train and monitor the model.



# Thank You

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