



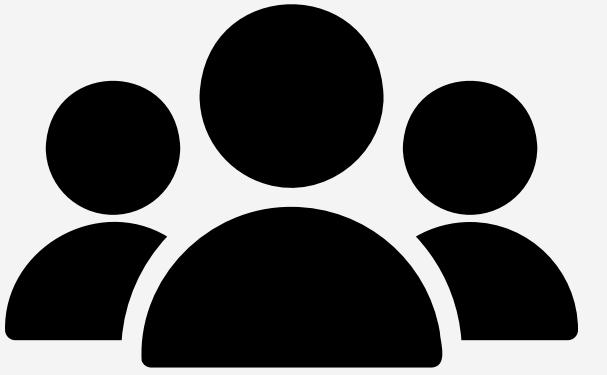
Since 1962

Vivekanand Education Society's Institute of Technology

Hashu Adwani Memorial Complex, Collector's Colony, Chembur, Mumbai, Maharashtra 400074

Comparing Different Classification algorithm for Telecom Churn

Professor : Mrs.Sangeeta Oswal



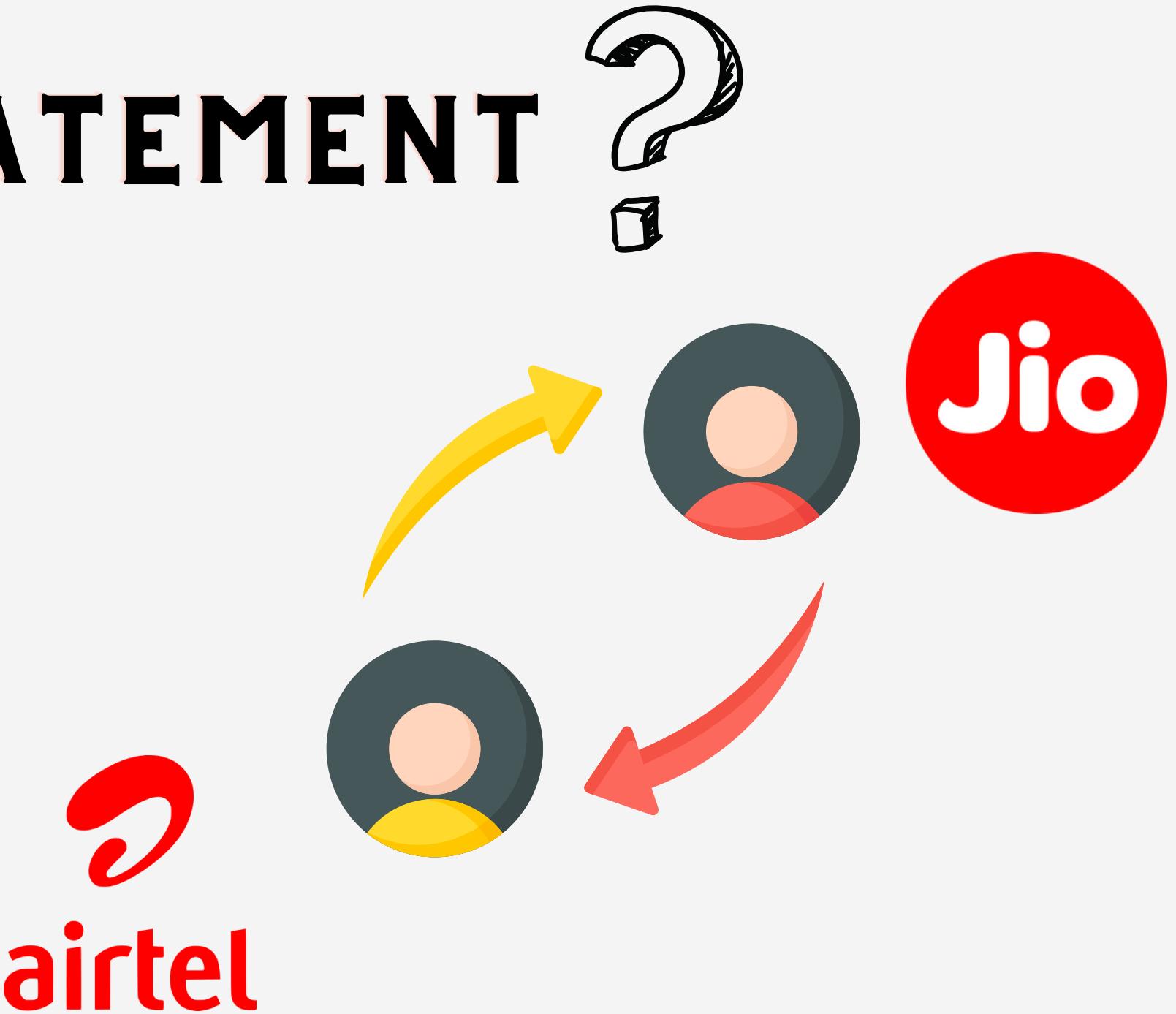
Team member



Name	Roll No.
Navneet Pujari	52
Soham Shetty	58
Vignesh Shivhare	60
Mukund Tiwari	62

PROBLEM STATEMENT ?

In the rapidly evolution of telecommunications, telecom churning has emerged as a critical issue affecting both consumers and service providers. Telecom churning refers to the frequent and voluntary switching of telecom service providers by consumers in pursuit of perceived better deals, pricing, or service quality.



INTRODUCTION

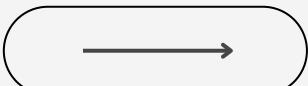
Churn Prediction is one of the most popular big data use cases in the industry. Churn is a problem for telecom companies because it is more expensive to acquire a new customer than to keep your existing one from leaving.



PROJECT OBJECTIVE

The Objectives of our Project are :-

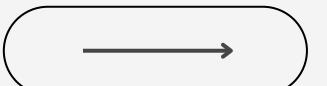
1. To predict customer churn.
2. Highlighting the main variables/factors influencing customer churn.
3. Use ML Algorithms to build Prediction models, evaluate accuracy and performance of these models.



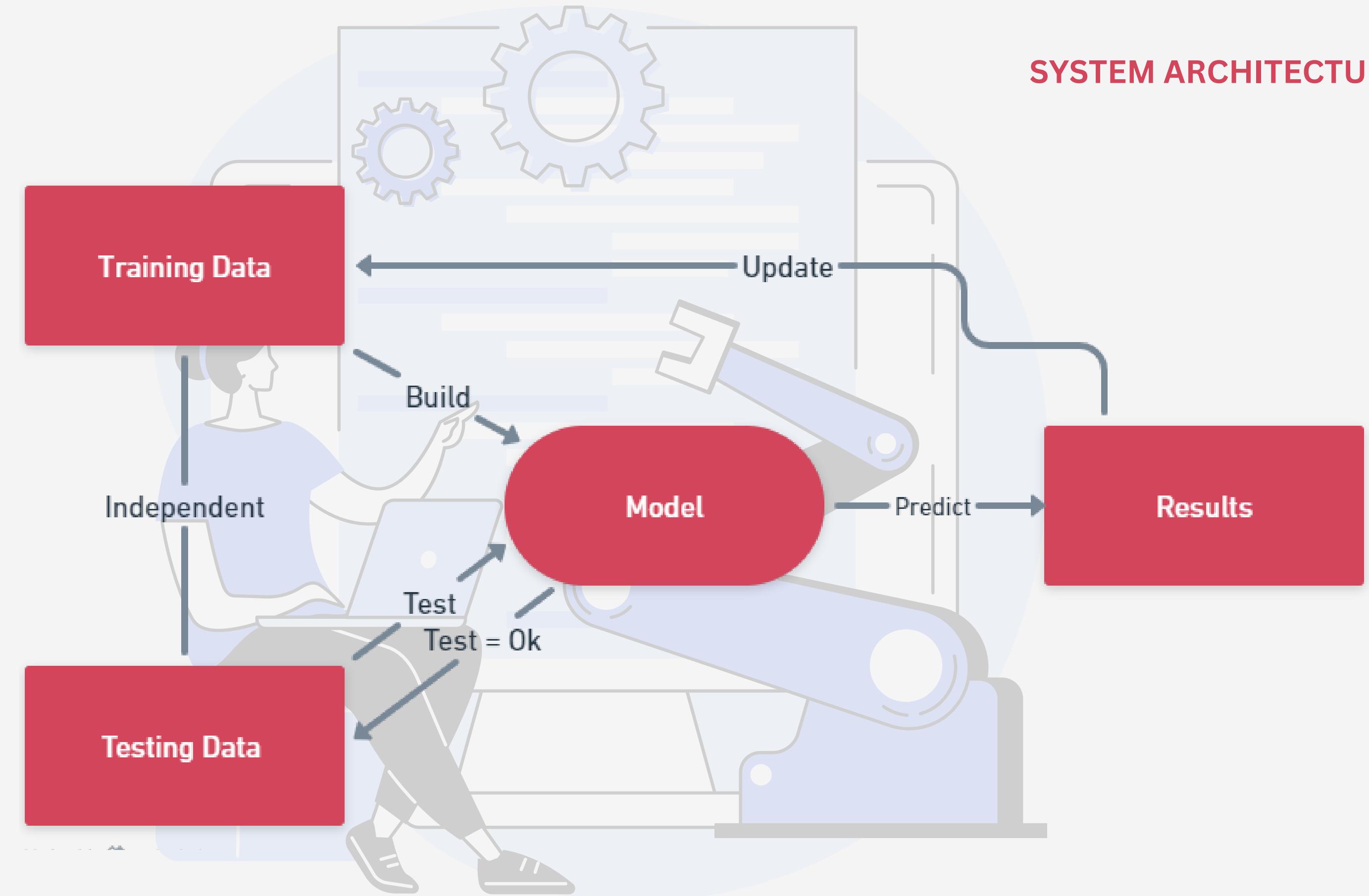


DATASET

1. The dataset offers insights into customer behavior and reasons for leaving, aiding companies in preventing customer loss.
2. Source Dataset is in CSV Format
3. Dataset contains 667 rows and 20 columns
4. Churn is the target variable

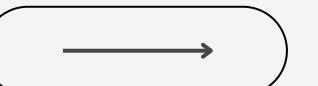


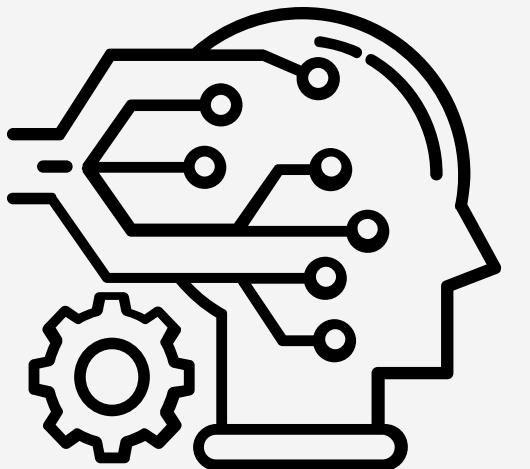
SYSTEM ARCHITECTURE



EXPLORATORY DATA ANALYSIS (EDA):

- Demographic Insights
- Usage Patterns
- Correlation Analysis
- Customer Satisfaction
- Plan Types and Pricing.





MODEL

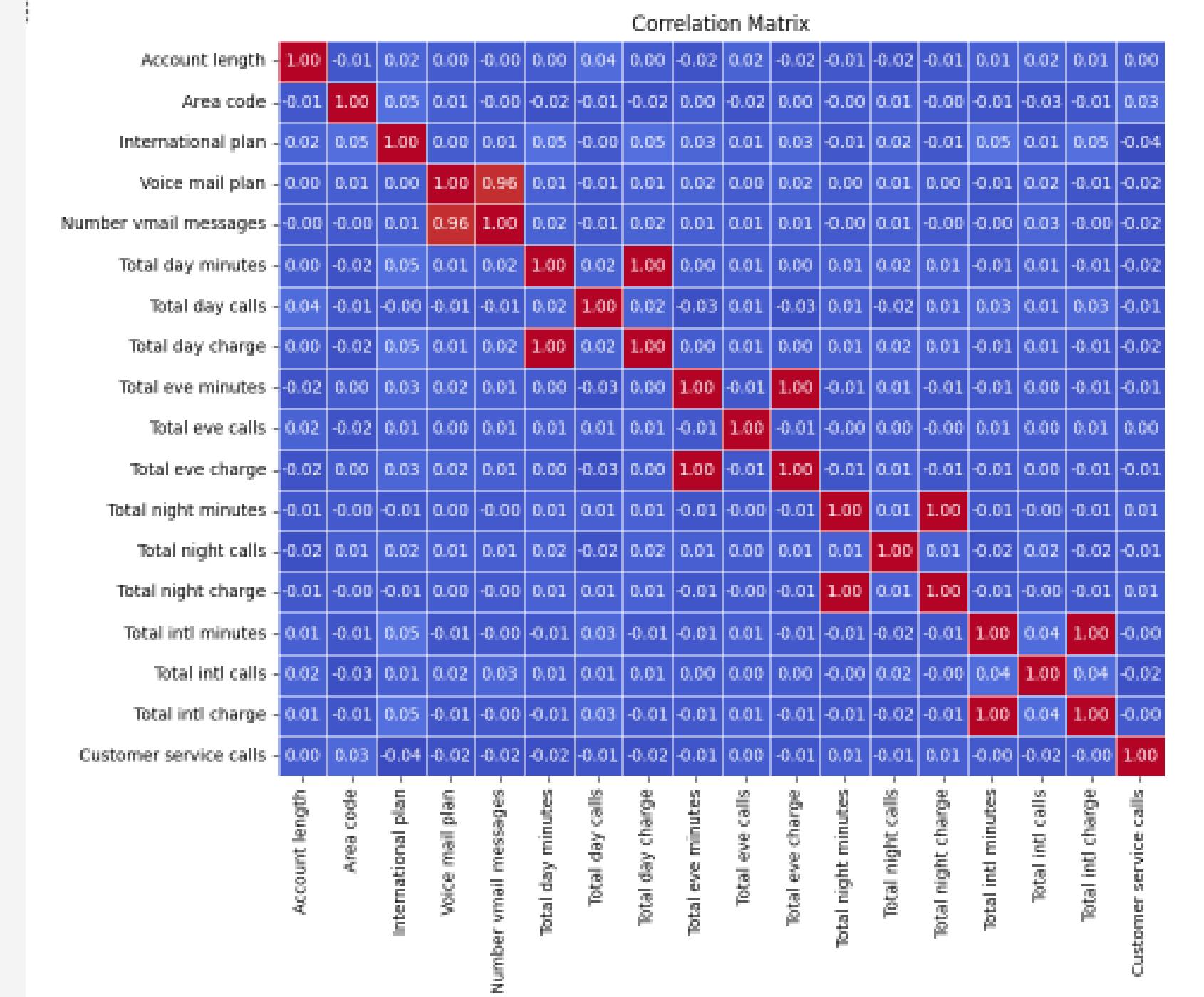
Model Used

- Logistic Regression
- XGBoost
- SVM
- Random Forest

Logistic Regression

Here Highly correlated attributes are dropped .

ACCURACY : 0.8446
F1 SCORE: 0.1782

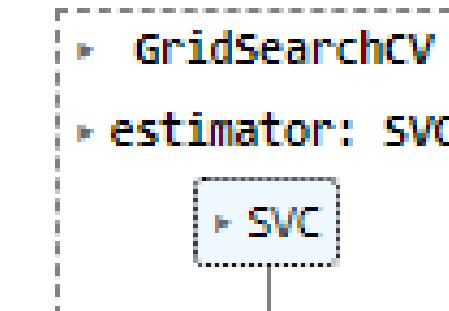


SVM

Here we have used Regularizing parameter as [0.1, 1, 10] and kernel functions as ['linear', 'poly', 'rbf', 'sigmoid']

The Best parameter outcome is
['C': 10, 'kernel': 'rbf']

```
[ ] grid_search = GridSearchCV(svc(), param_grid, cv=5, scoring='f1')  
grid_search.fit(x_train_scaled, y_train)
```



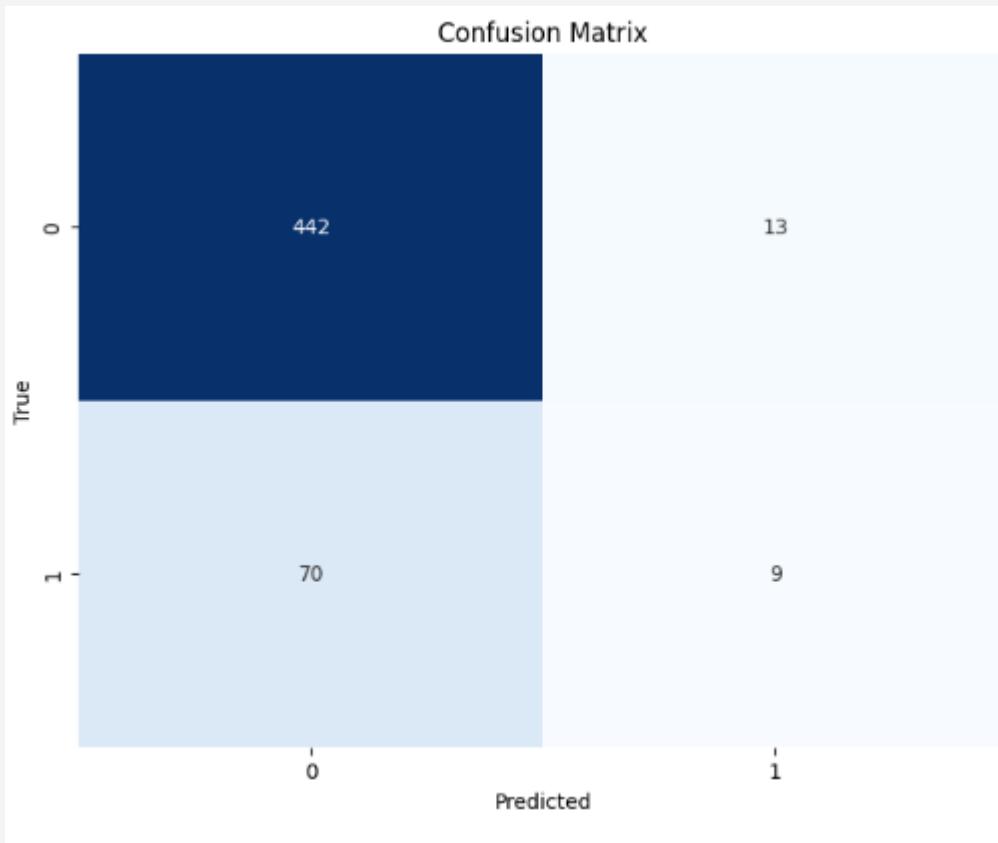
```
[ ] y_pred = grid_search.predict(x_test_scaled)
```

```
[ ] print("Best Parameters:", grid_search.best_params_)
```

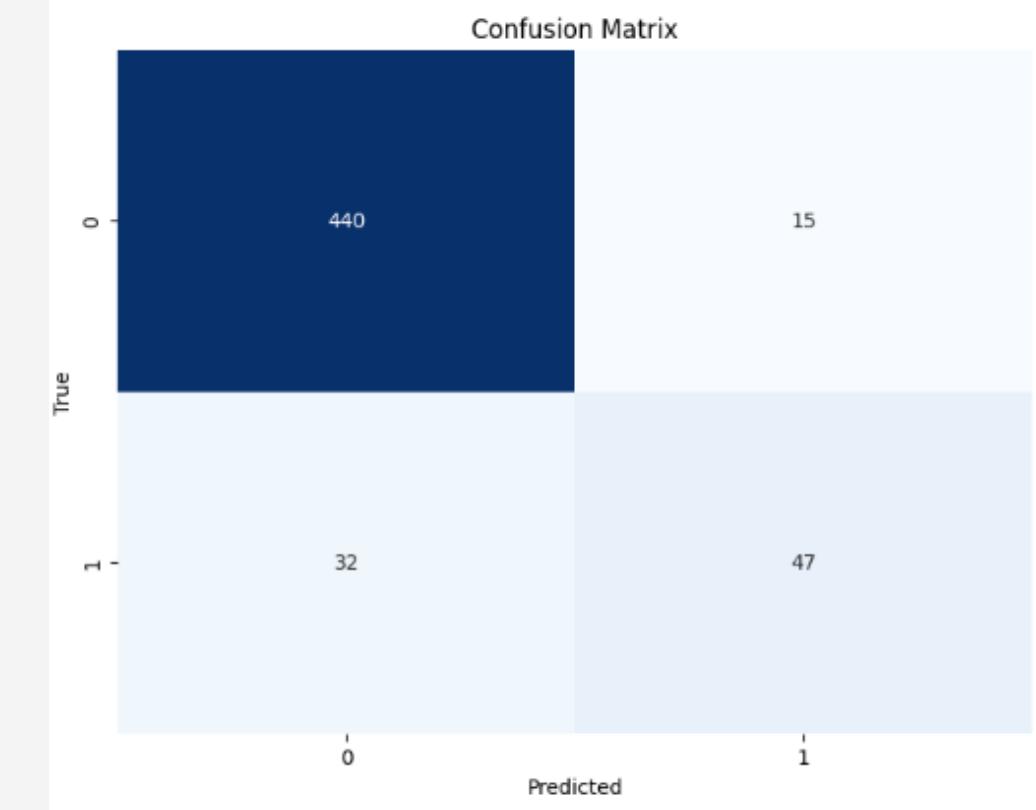
```
Best Parameters: {'C': 10, 'kernel': 'rbf'}
```

Comparison

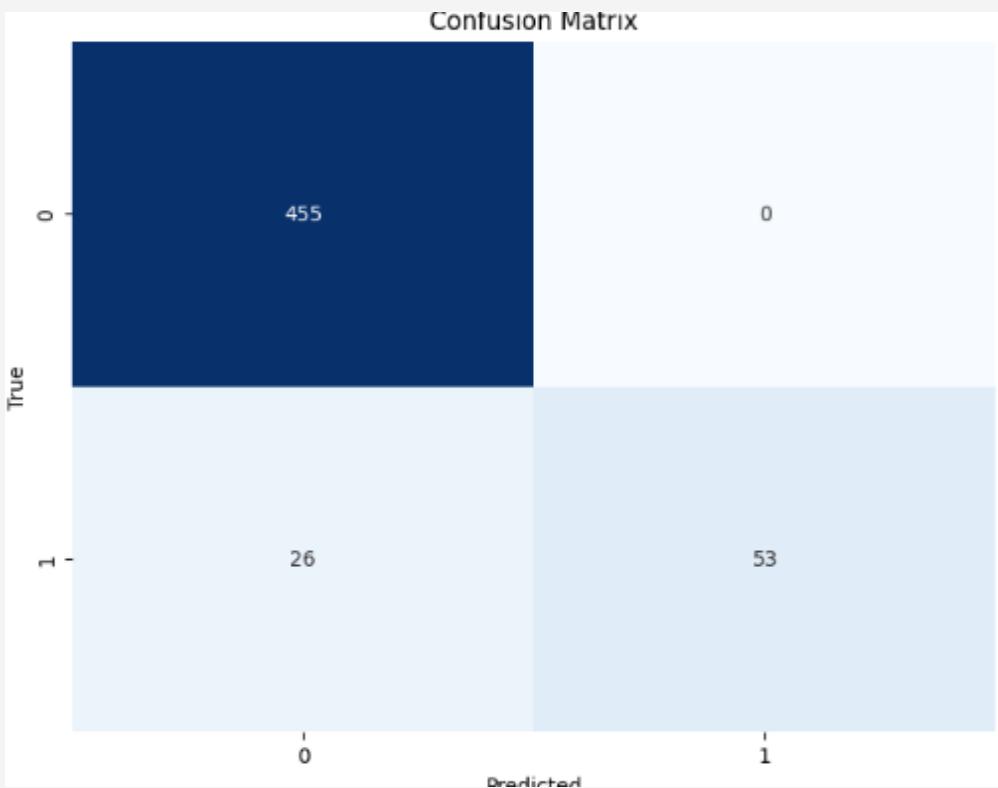
Logistic regression



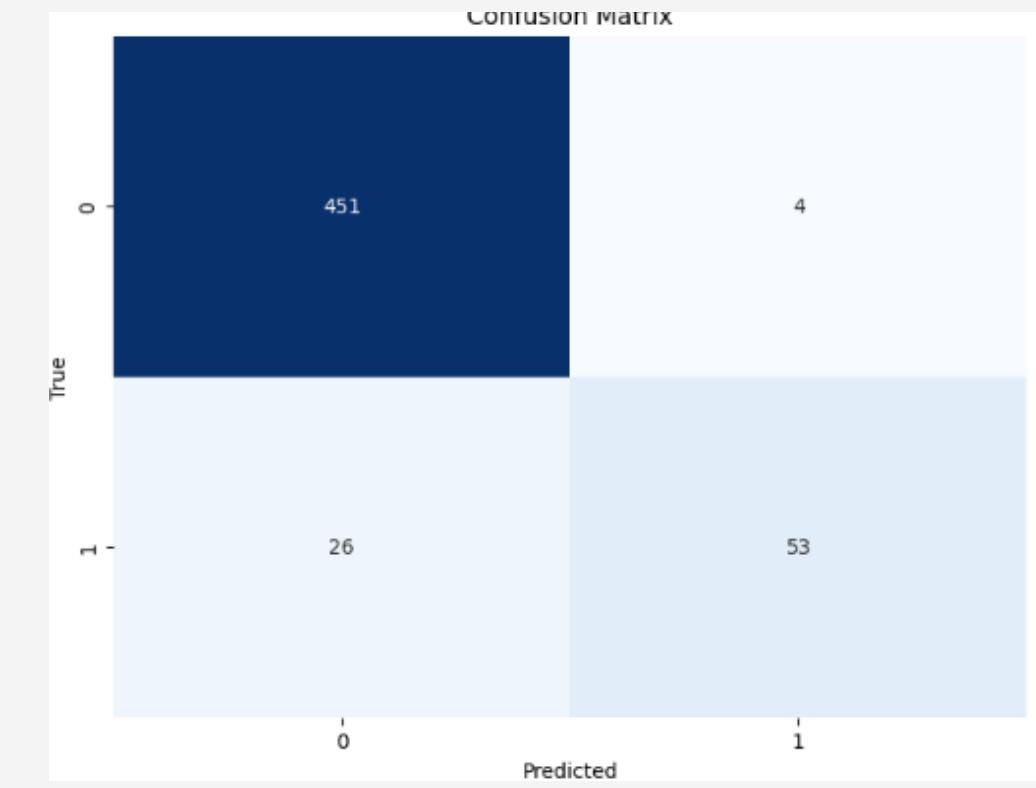
SVM



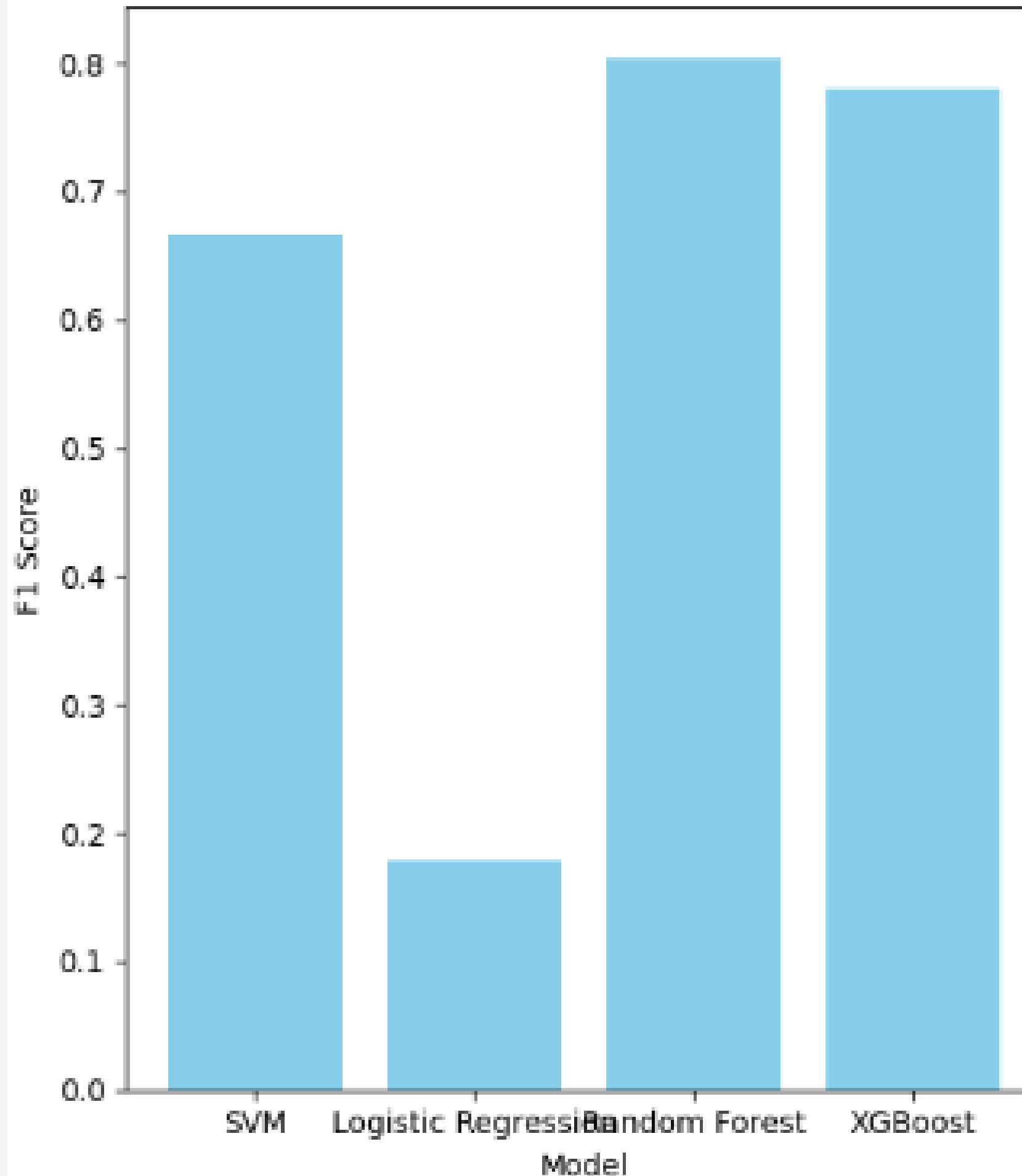
Random Forest
Classification



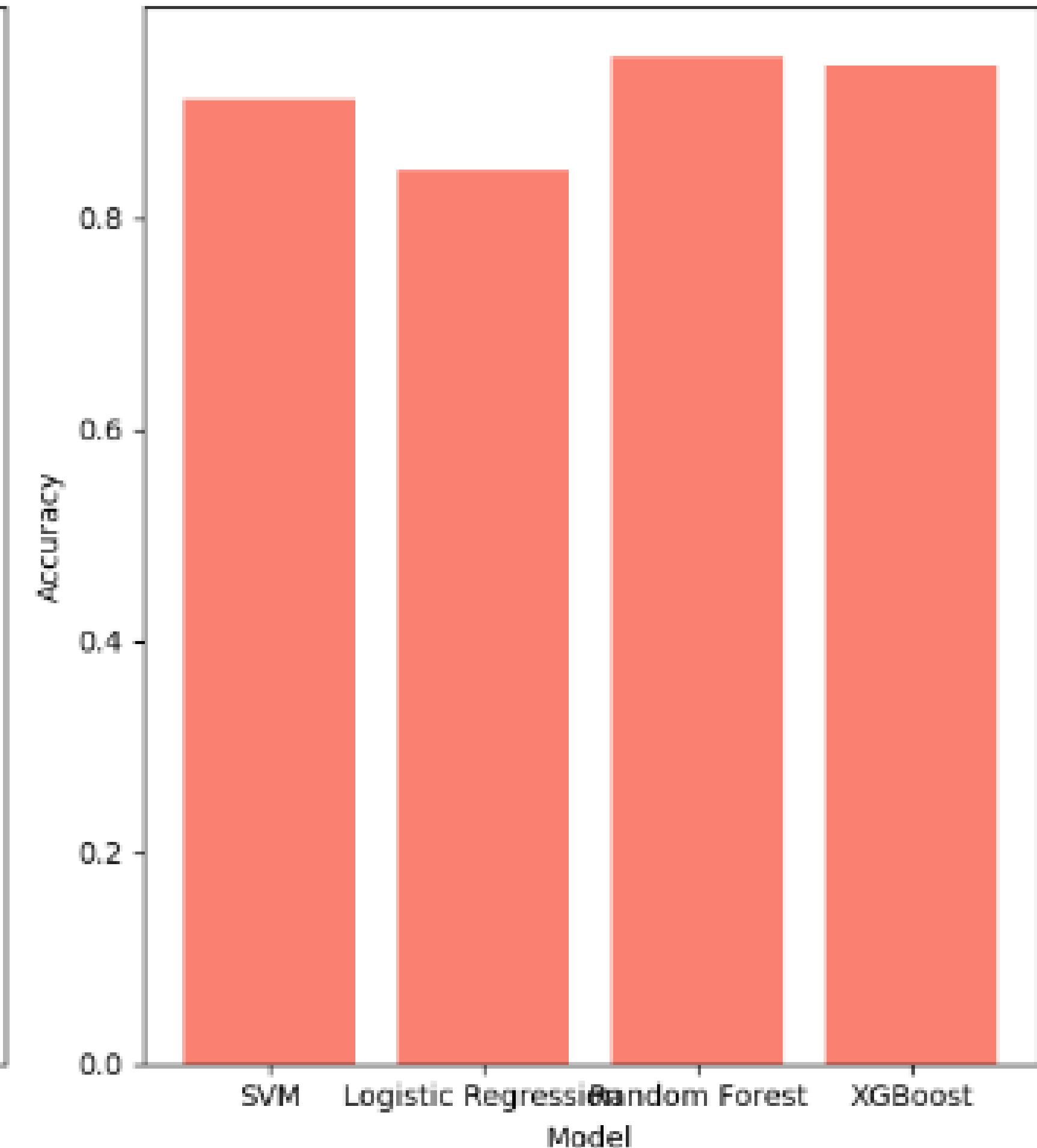
XGBoost



F1 Score Comparison



Accuracy Comparison



OUTPUT

Deploy ::

Telecom Churn Prediction App

Input Features

State: IN

Account Length: 1

Area Code: 415

International Plan: Yes

Voice Mail Plan: Yes

Number of Voicemail Messages: 0

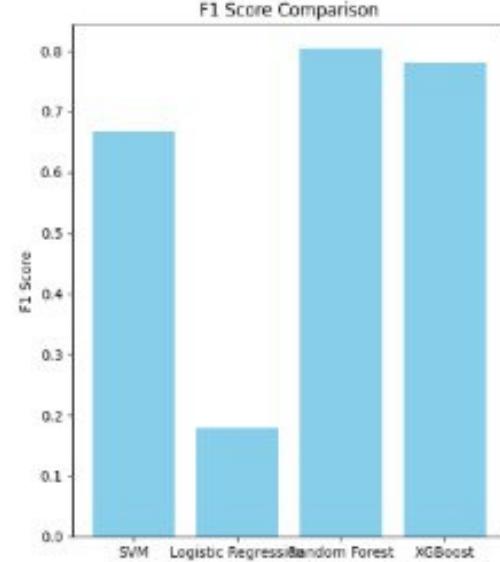
Day Usage

Total Day Minutes: 130.00

Total Day Calls: 137

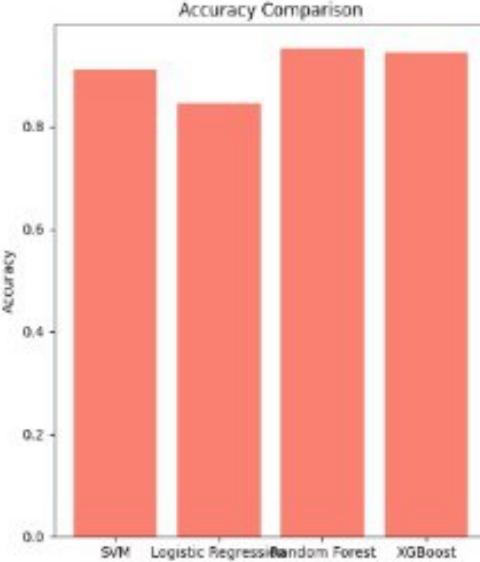
Total Day Charge: 30.00

F1 Score Comparison



Model	F1 Score
SVM	~0.68
Logistic Regression	~0.18
Random Forest	~0.82
XGBoost	~0.80

Accuracy Comparison



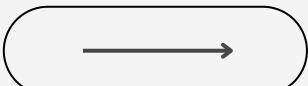
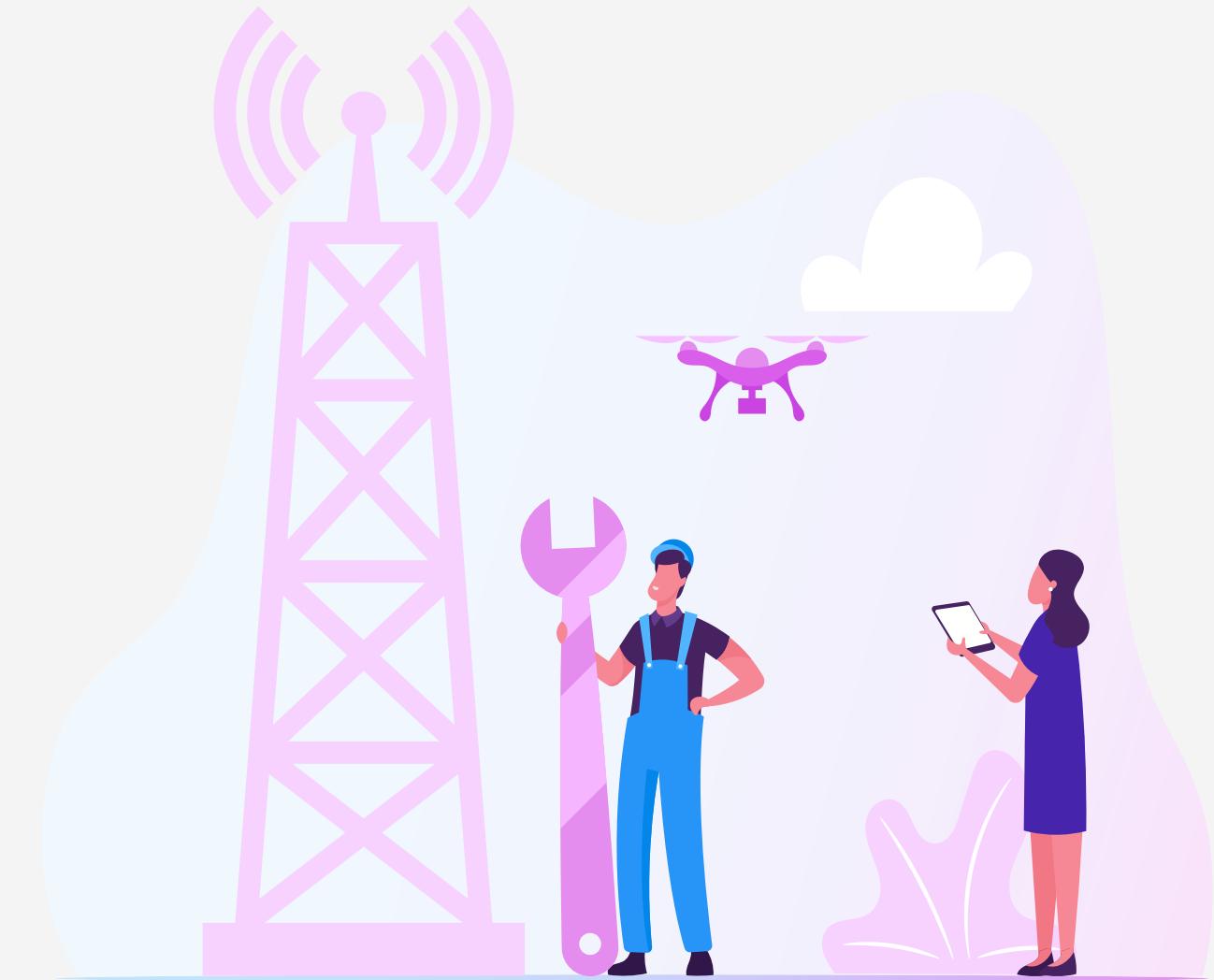
Model	Accuracy
SVM	~0.75
Logistic Regression	~0.72
Random Forest	~0.82
XGBoost	~0.82

Predict

This customer is predicted to stay.

FINDINGS/SUGGESTIONS

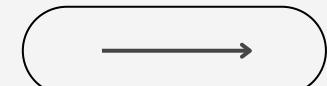
- Targeted Marketing
- Improving Service Quality
- Customer Retention Programs
- Optimize Plan Offerings
- Enhance Communication



CONCLUSION

It successfully leverages data analysis and machine learning techniques to forecast customer churn, providing valuable insights for proactive retention strategies and sustainable business growth.

It has become known that predicting churn has become one of the most important sources in the Telecom Market.



THANK YOU