

Predicting Customer Churn for SyriaTel Using Machine Learning

Binary Classification Model

Business Problem

SyriaTel, like many telecom companies, loses revenue when customers leave unexpectedly.

Understanding customer churn allows the business to take early action.

- Churn prediction is a binary classification problem:
- Will a customer churn? Yes or No
- Goal: Build a predictive model using customer data
- Business impact: Reduce revenue loss and increase customer retention

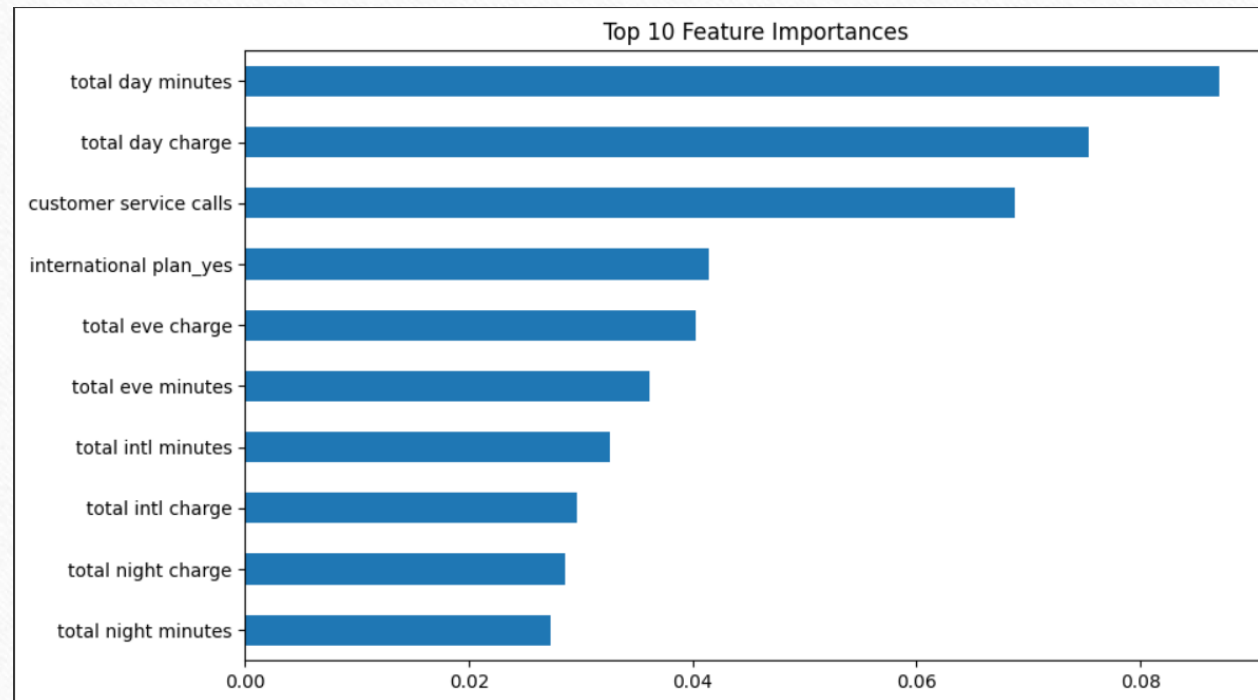
Project Objectives

This project aims to identify customers who are at high risk of leaving SyriaTel.

OBJECTIVES

1. Use customer behavior and demographic data to predict churn
2. Evaluate and compare different models for accuracy and recall
3. Identify key drivers of churn
4. Provide actionable business recommendations
5. Help SyriaTel improve customer retention through data insights

Key Customer Features

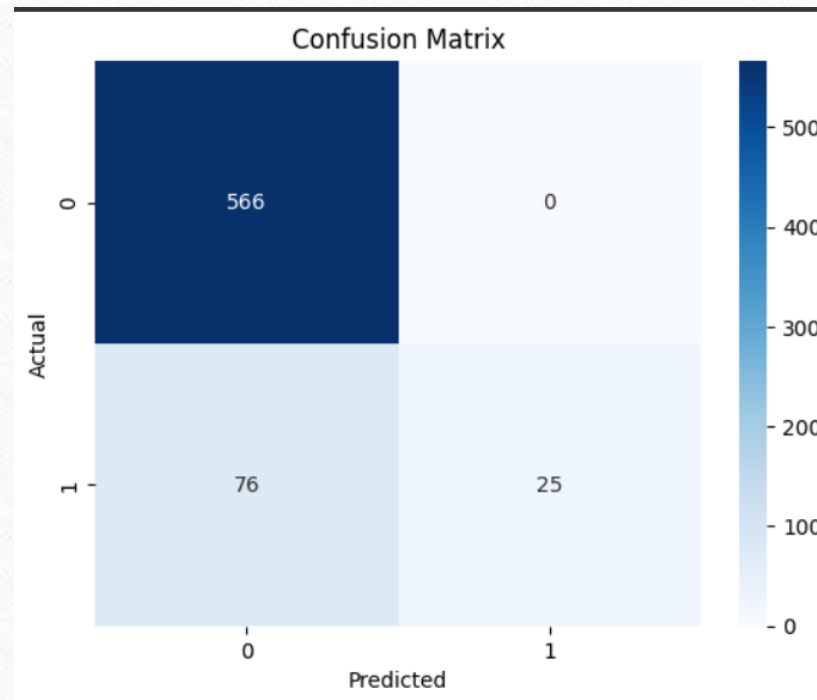


Performance in Customer Retention Detection

Model's Performance in Identifying Customer Retention

- Random Forest was used to classify customers into churn and non-churn categories.
- Recall score was prioritized to catch as many churn cases as possible
- Random Forest provided a good balance between precision and recall
- It performed better than the baseline Logistic Regression model in identifying customers likely to churn

Model Evaluation Metrics



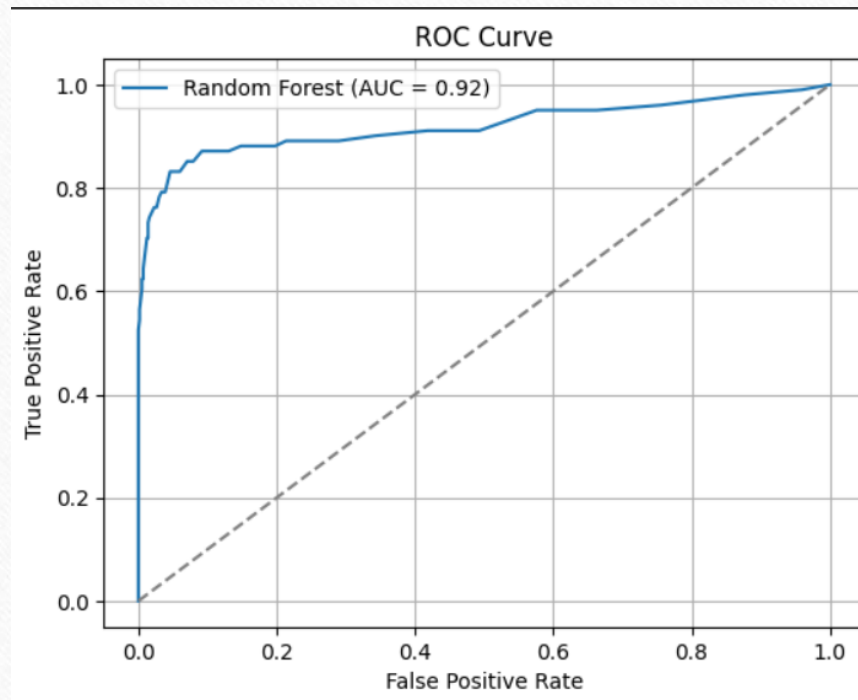
Interpretation of the Matrix

The confusion matrix helped us see where the model was making errors:

- True Positives (TP): Correctly predicted churns
- False Positives (FP): Predicted churn, but customer stayed
- True Negatives (TN): Correctly predicted retention
- False Negatives (FN): Missed churns (most costly)

Minimizing false negatives is crucial because those are customers we could lose without warning.

Model Comparison



Interpretation

The Random Forest model showed that:

- Customers with month-to-month contracts, high monthly charges, or short tenure were more likely to churn
- Customers on longer contracts or with automatic payments were more likely to stay

These insights can guide SyriaTel in identifying at-risk customers early.

Key Insights

Churn is more common among customers with:

- Month-to-month contracts
- No internet services
- High charges and short tenure
- Tenure is a strong predictor—longer-tenure customers are more loyal
- Contract type and payment method significantly influence retention

Recommendations

To reduce churn and boost retention, SyriaTel should:

- Offer loyalty rewards or discounts to long-tenure customers.
- Incentivize customers to switch to long-term contracts.
- Promote automatic payments to reduce friction.
- Launch targeted outreach campaigns to high-risk segments.

Proactive strategies based on model insights can save revenue and increase customers satisfaction.



Thank you

Any questions?