Title: Predicting Customer Churn in Telecommunications

Subtitle: A Data-Driven Approach to Enhancing Retention Strategies at SyriaTel

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Project Overview

•**Objective**: Predict customer churn and identify key factors influencing churn for SyriaTel.

•**Dataset**: 3333 records, 21 features including usage patterns and service plans.

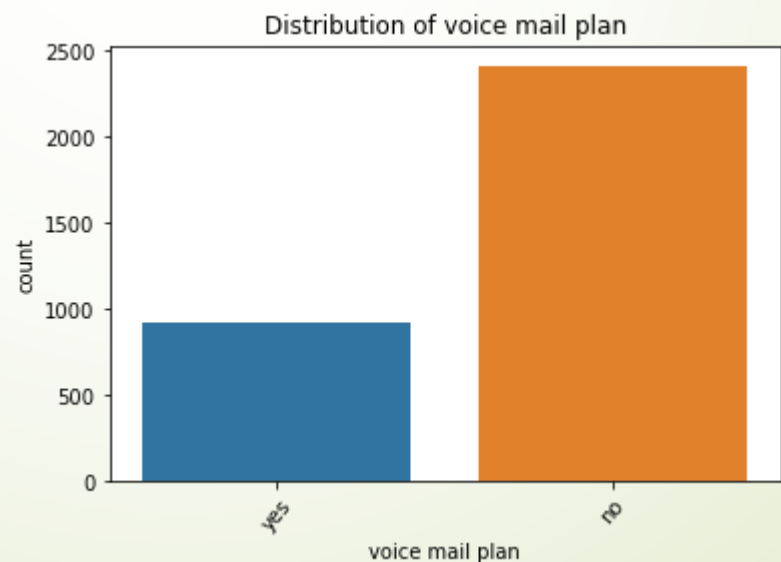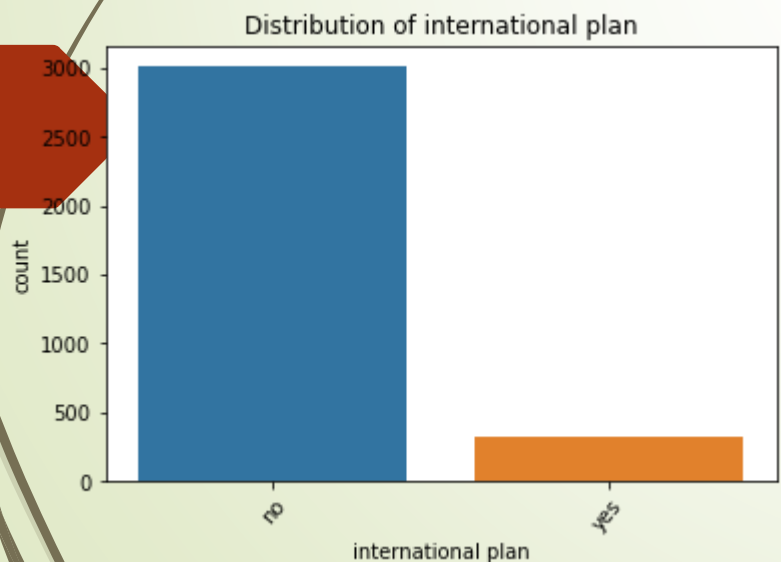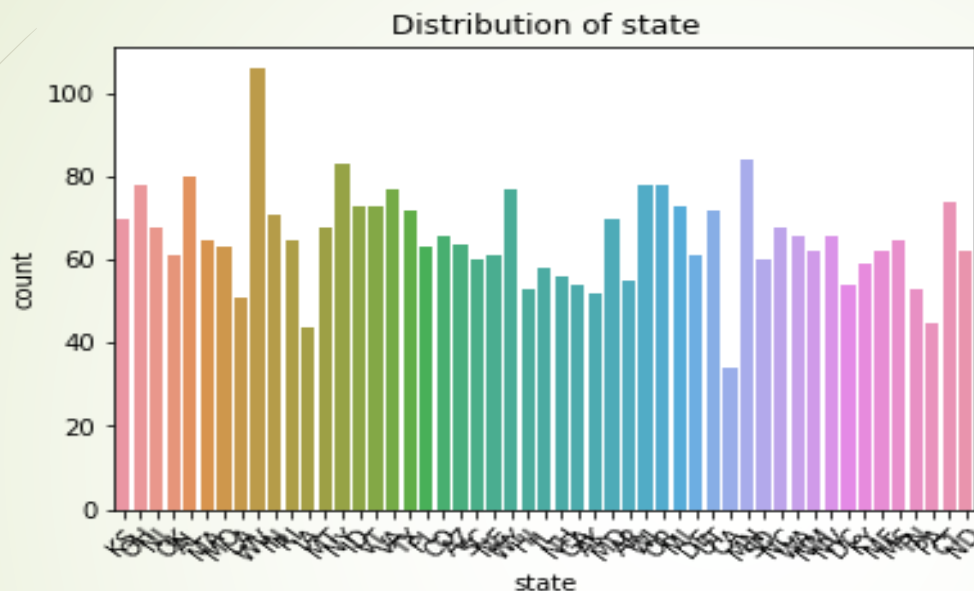**Dataset Description**

•**Features**:
- State, Account Length, Area Code, International Plan, Voice Mail Plan
- Call Metrics: Day, Evening, Night, International
- Charges: Day, Evening, Night, International
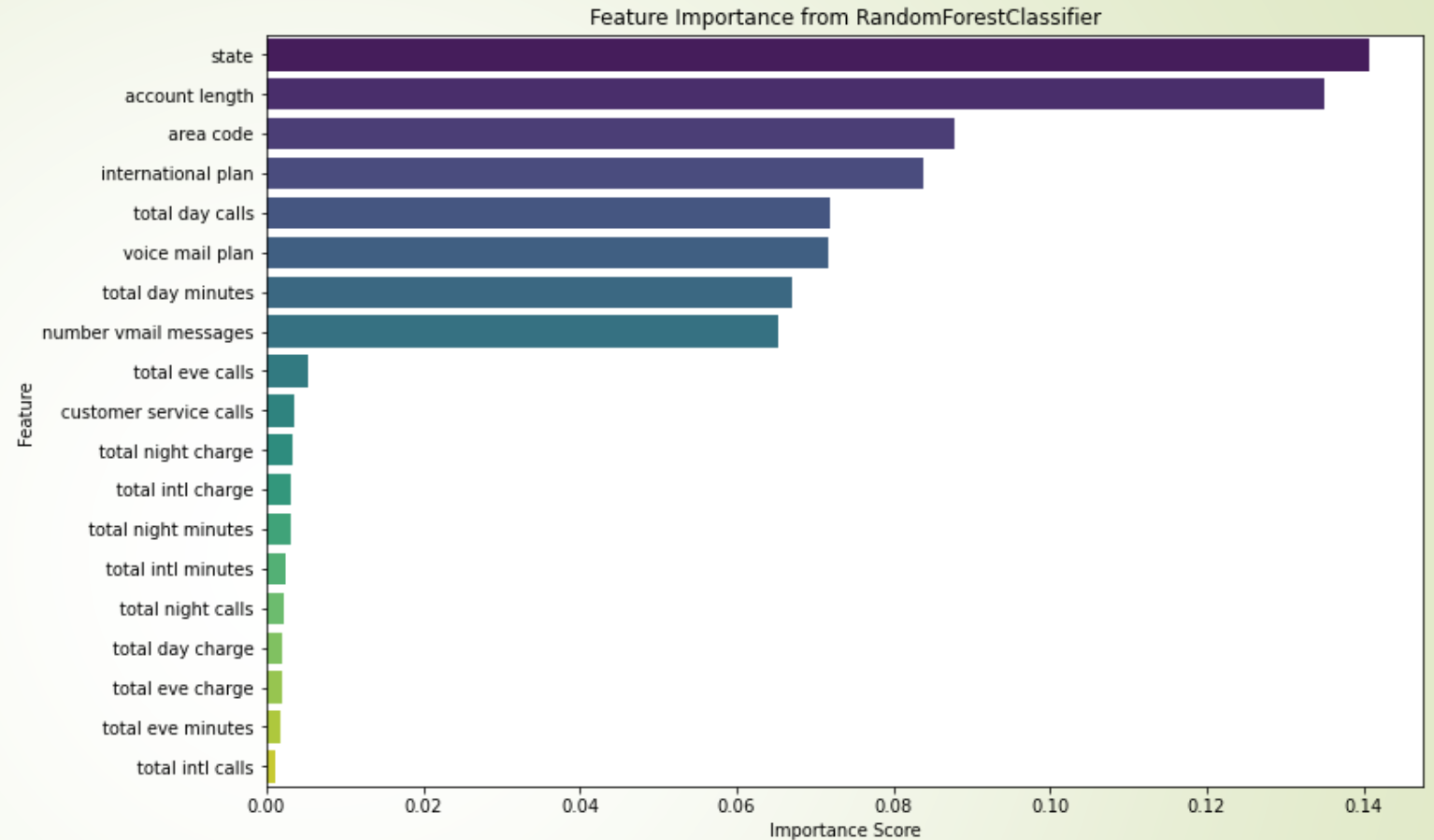- Customer Service Calls, Number of Voicemail Messages

Data Exploration: Distribution of Categorical Data

Feature Importance

•**Key Features:**
- State (0.140654)
- Account Length (0.135059)
- International Plan (0.083961)
- Total Day Calls (0.071853)

Feature Importance from RandomForestClassifier

Model Building

Flowchart of model building process.

Define the Problem

Collect Data

| Data Explore & Preprocess |

Split Data

Choose a Model

Train the Model

Evaluate the Model

Tune Hyperparameters
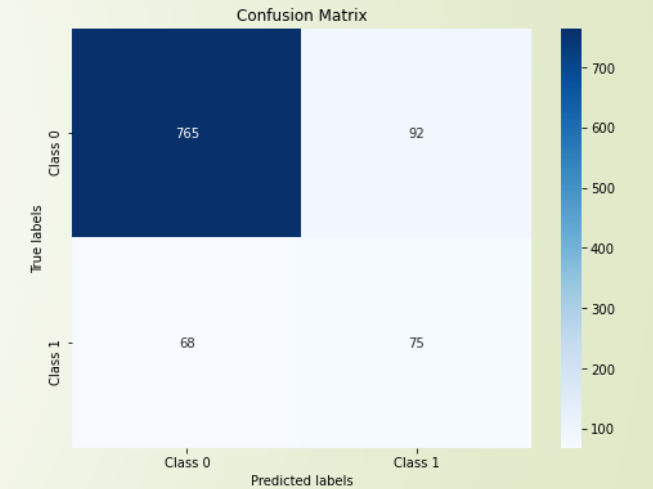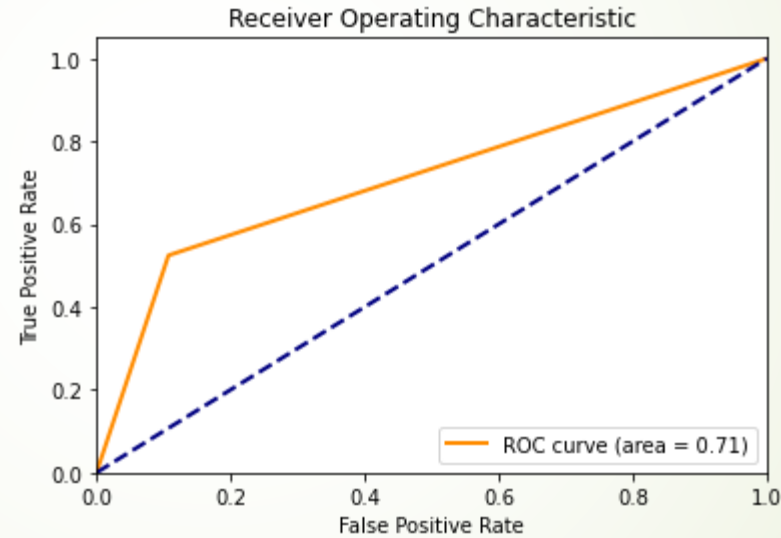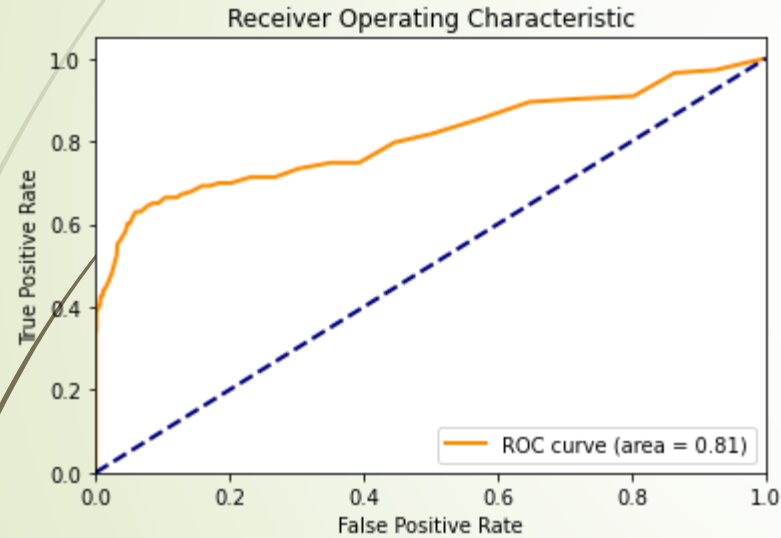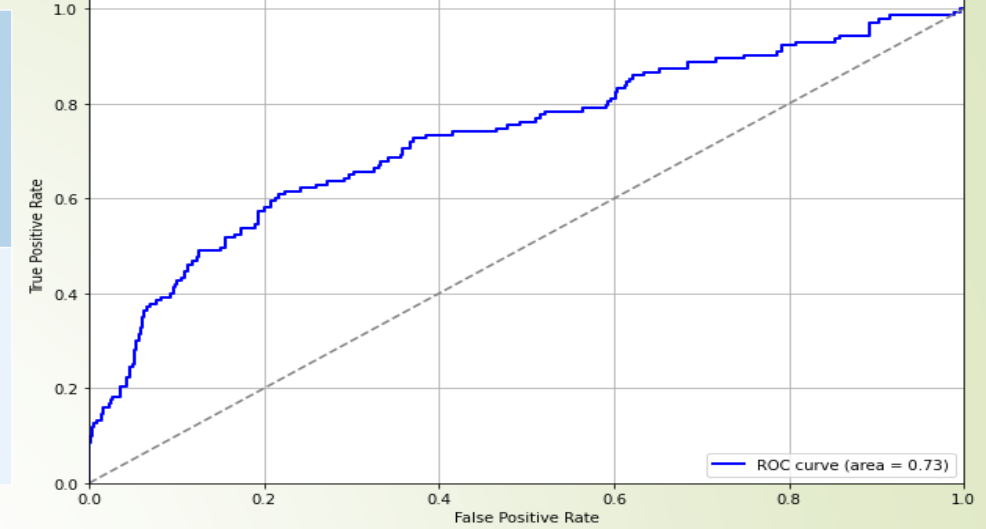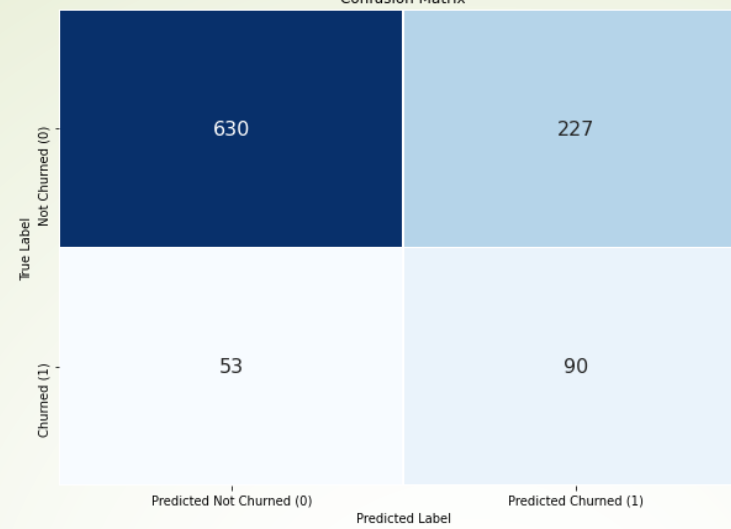
Make Predictions

Interpret Results

Deploy the Model

Monitor & Maintain

Model Evaluation

•Metrics:

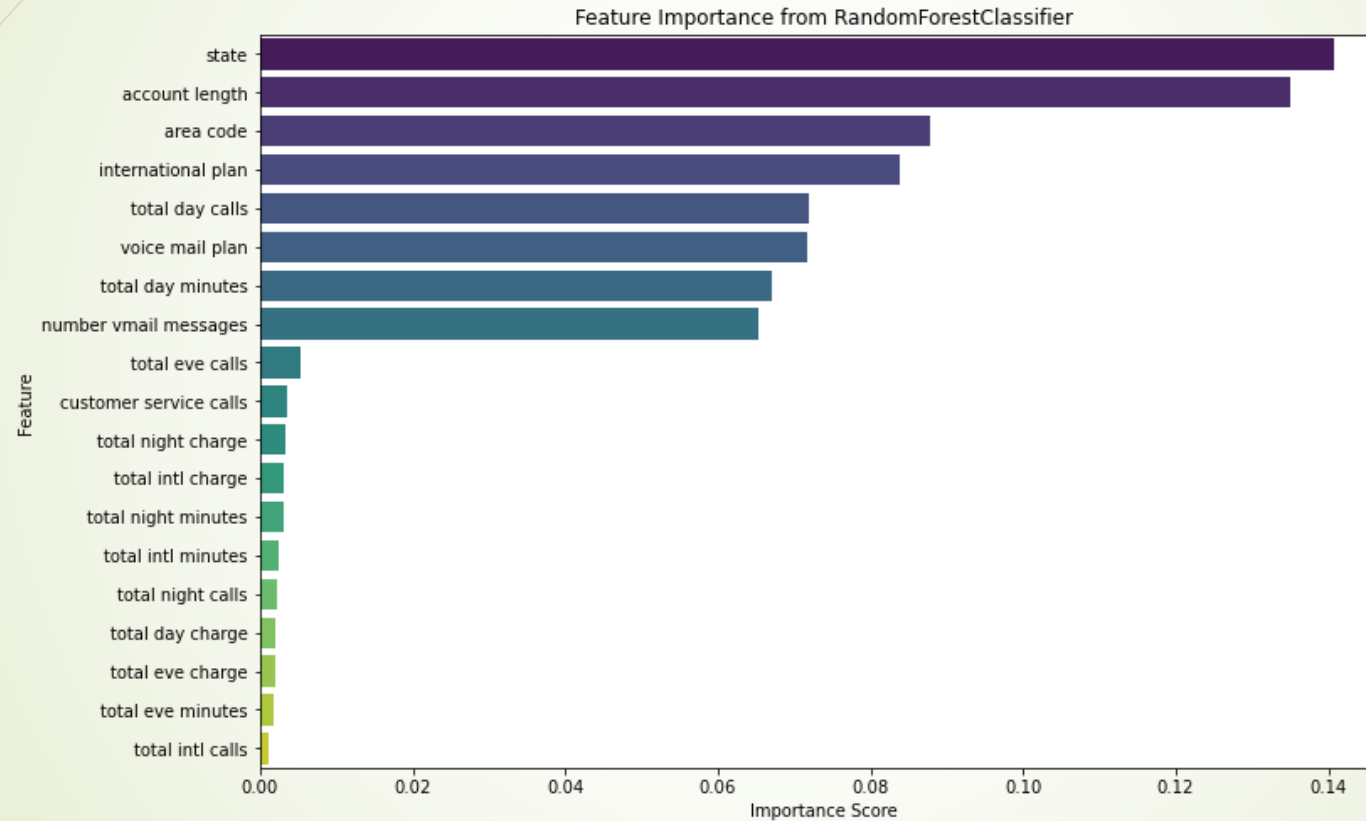- Accuracy
- Precision
- Recall
- F1 Score

Key Insights
•**High Impact Features**:
- State, Account Length, International Plan

•**Low Impact Features**:
- Nighttime calls, Customer Service Calls

Feature Importance from RandomForestClassifier

Recommendations

- Enhance Regional Service Quality
- Optimize Account Management and Loyalty Programs
- Review and Enhance International Plans
- Improve Daytime Call Services
- Monitor and Address Customer Service Interactions

Q&A