

# Introduction

- SyriaTel telecommunications company in Syria
- Challenge of identifying and preventing customer churn
- Leveraging machine learning techniques for prediction



# Objective

- Accurately predict customer churn for SyriaTel
- Proactively implement measures to mitigate customer attrition
- Benefits
  - Improved customer retention
  - Increased profitability
  - Enhanced customer experience

# Data Understanding

- Dataset:
  - US telco data used for analysis
  - Information on 3333 users over 256 days
- Assumption:
  - Geolocation and zip code data excluded
  - Other data signals utilized for Syrian telco market inferences

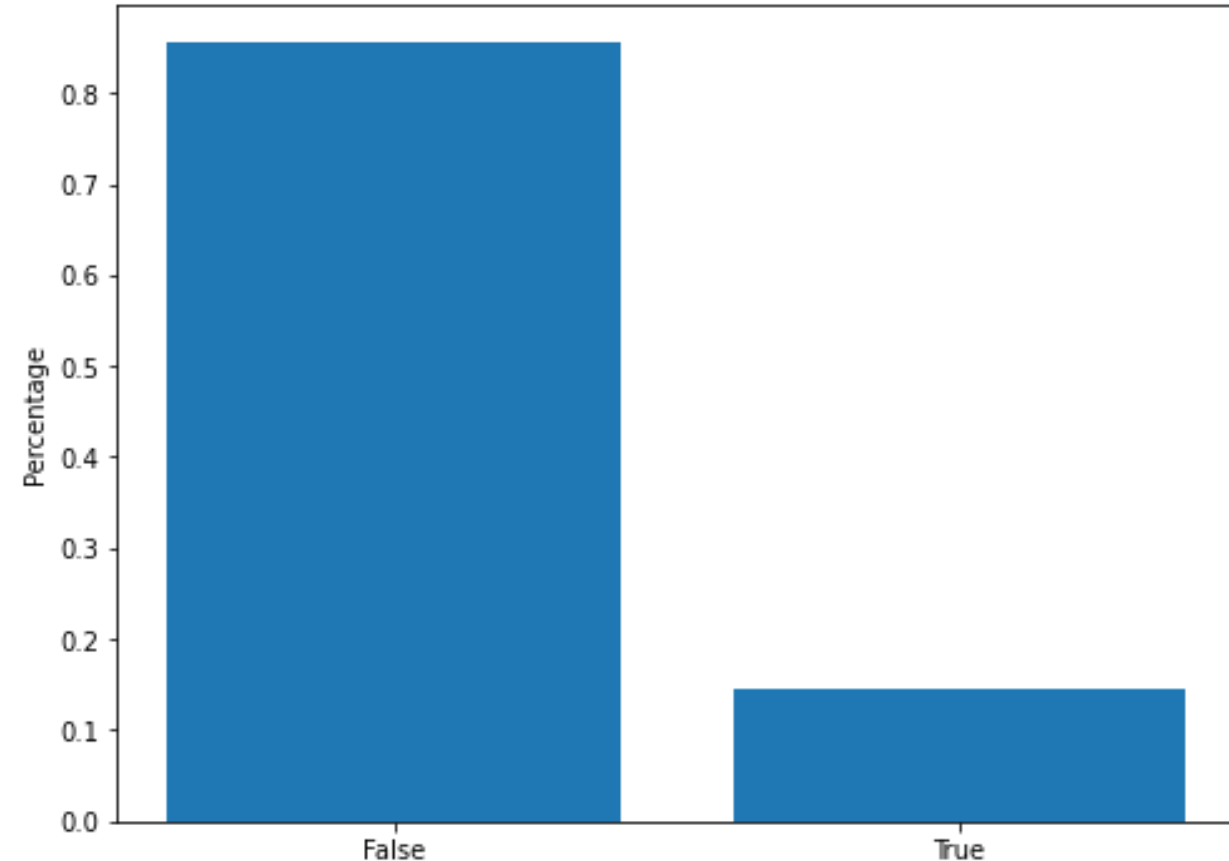


# Business Understanding

- Importance of Customer Churn Analysis:
  - Impact on profitability
  - Resource allocation for customer retention
  - Enhancing service quality and customer experience
- SyriaTel's Objectives:
  - Improved customer retention
  - Increased profitability
  - Enhanced customer satisfaction

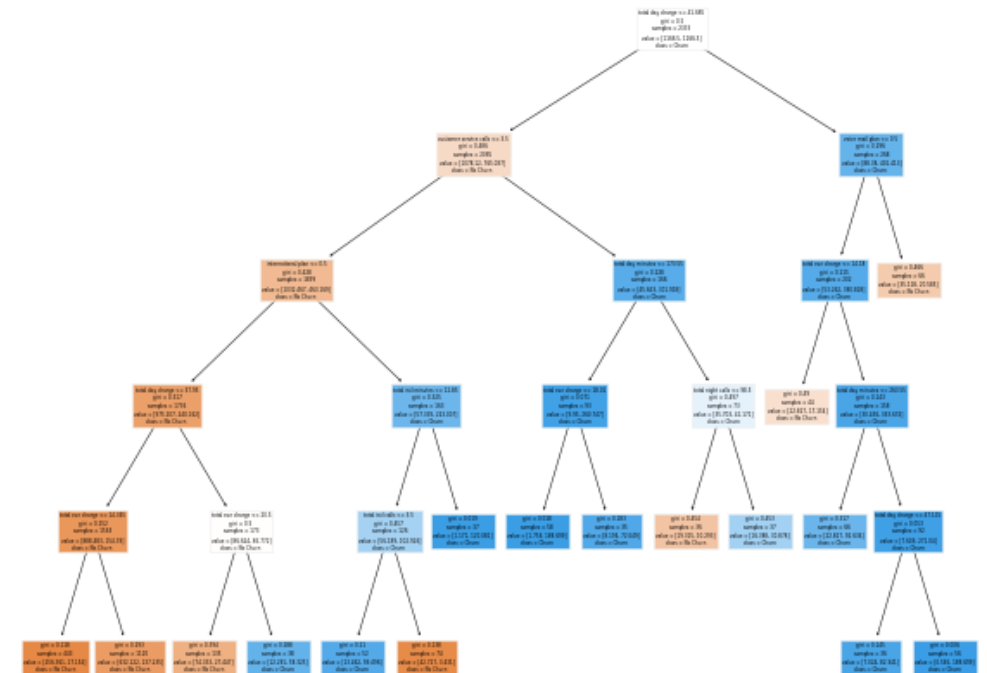
# Data Cleaning

- Dataset:
  - No missing values or significant outliers
- Class Imbalance:
  - Churned users: 14.49%
  - Handling imbalance for modeling



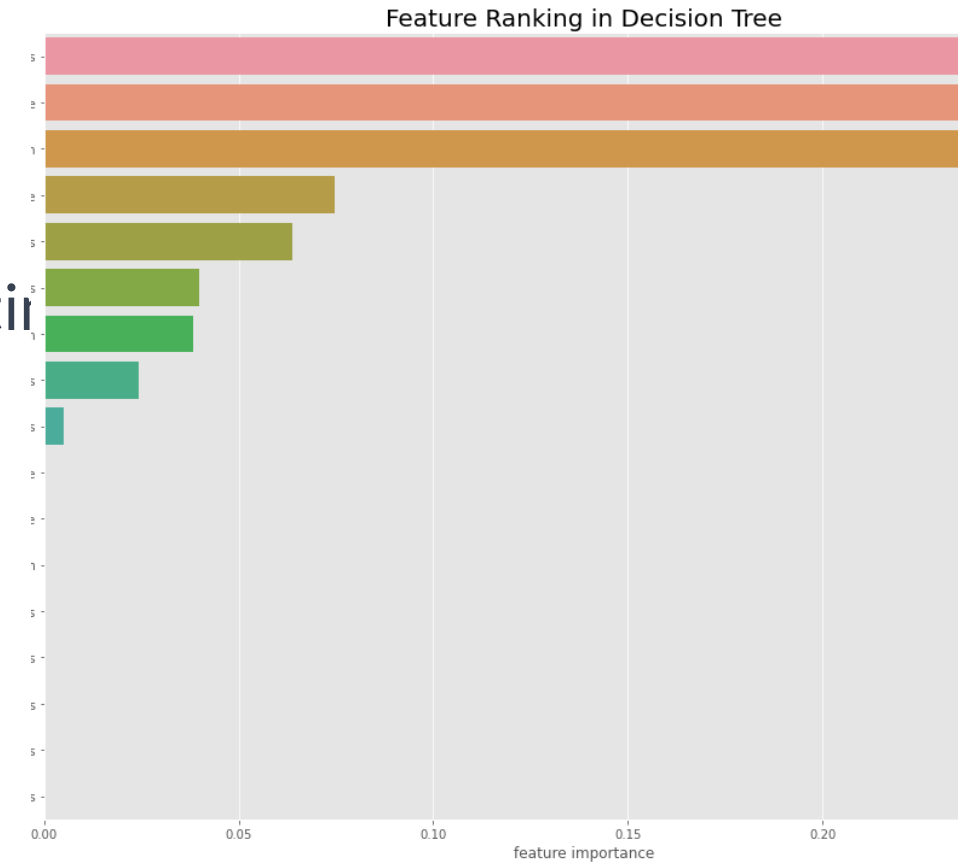
# Modeling

- Binary Classification Problem:
  - Significant class imbalance
- Performance Evaluation Metric:
  - roc\_score for imbalanced datasets
- Model Selection:
  - Baseline model: Naive Bayes
  - Decision Tree, Random Forest, Logistic Regression
- Hyperparameter Tuning:
  - GridSearch CV to optimize performance



# Evaluation

- Cost Evaluation:
  - Potential costs of False Negatives
  - Acquiring new customers vs. retaining existing ones
- Model Performance:
  - Overall accuracy: 87%
  - Recall: 83%
- Potential Benefits:
  - Estimated cost savings: \$24,915 per 1000 customers



# Feature Importance

- Impactful Features:
  - Customer service calls
  - International plan
  - Total day charge
- Weight of Features:
  - Three times more significant than others





# Recommendations:

- Improve customer service quality
- Evaluate and optimize international plan offerings
- Monitor and manage total day charge effectively
- Integrate model predictions into retention strategies
- Continuous monitoring and evaluation for improvements
- Expand analysis to include internet services segment