TELECOMMUNICATION CUSTOMER CHURN

Predict whether a customer will churn

Presented by: Alberto SYLVEUS – Data scientist student

OVERVIEW

A telecommunication company, his name is SyriaTel, he wants to be informed whether a customer will ("soon") stop doing business with him.

Business and data understanding

Business Problem

- SyriaTel faces customer churn (clients leaving the service).

- Retaining customers is more cost-effective than acquiring new ones.

- Goal: Predict churners to take proactive actions (offers, support, loyalty programs).

Business and data understanding

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Stakeholders

- **Executives**: Want financial impact insights.

- **Marketing**: Design targeted retention campaigns.

- **Customer Service**: Engage with at-risk customers.

- **Data Science Team**: Build & maintain predictive models.

Business and data understanding

Dataset

- Source: SyriaTel customer data.
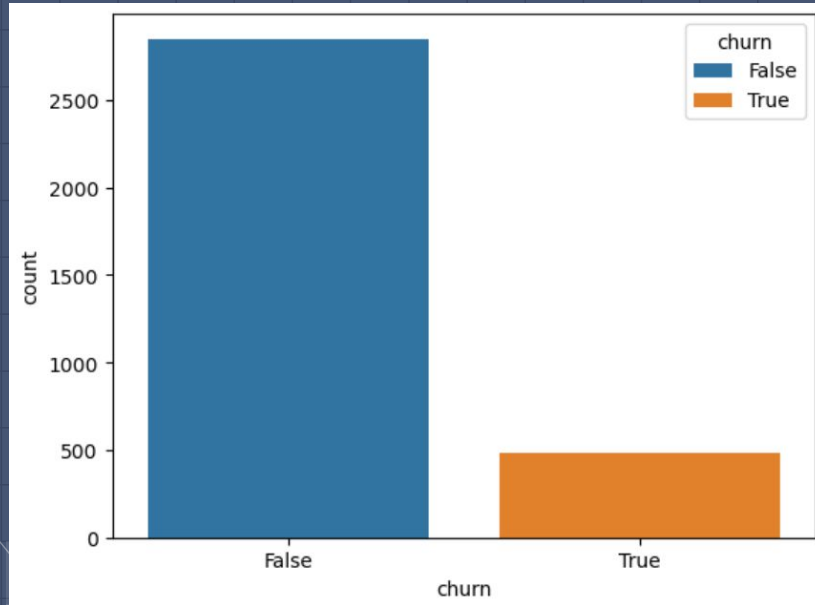- Size: 3333 rows and 21 columns.

Features:

- Account length, international plan, voicemail plan
- Call usage (day, evening, night, international)
- Number of customer service calls
- Target Variable: Churn (1 = left, 0 = stayed).
- Etc …

Proportion class 1/0 (churner) diagram

Source: SyriaTel customer data.
● The dataset is imbalanced.

MODELING

Approach

- Tested two algorithms: Logistic Regression & Decision Tree

- Data split: 70% training / 30% testing

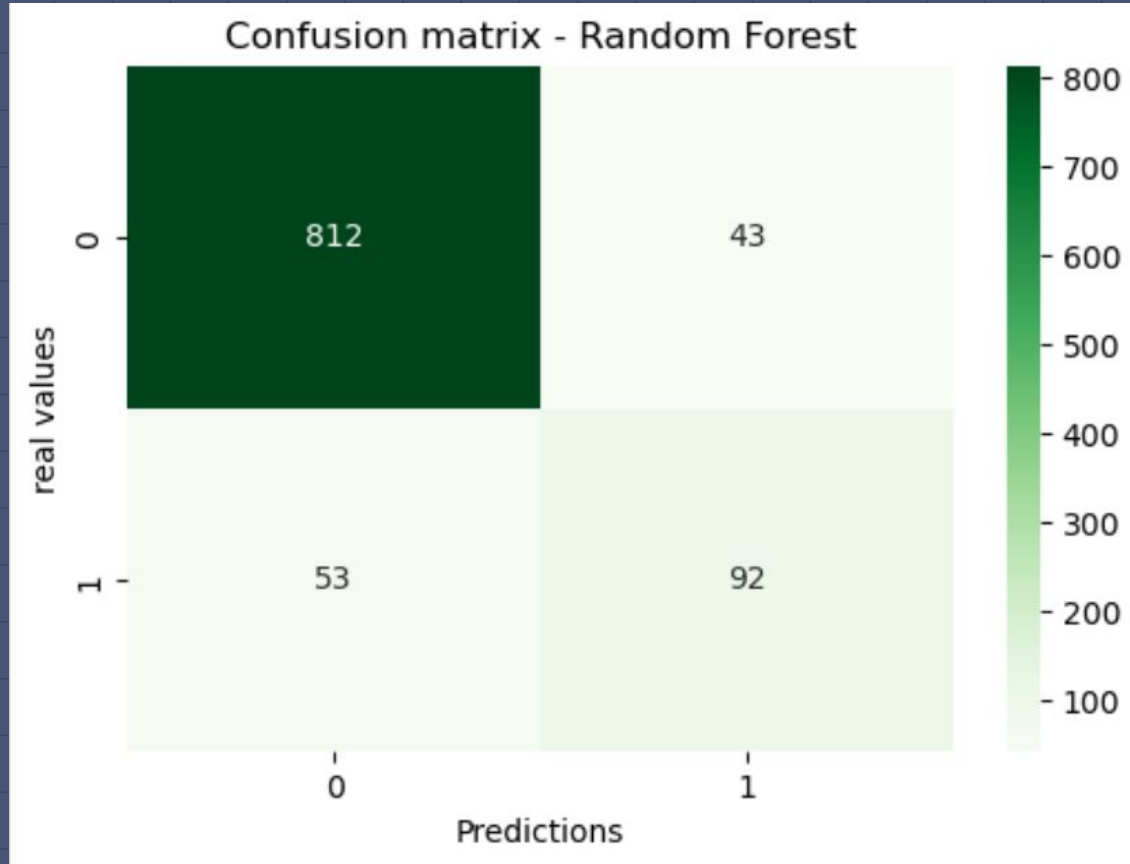- Evaluated using Accuracy, Precision, Recall, F1-Score

MODELING

Model	Accuracy	Recall (Churn)	F1-Score
Logistic Regression	75%	0.69	0.45
Random Forest	90%	0.63	0.66
Decision Tree	88%	0.72	0.64

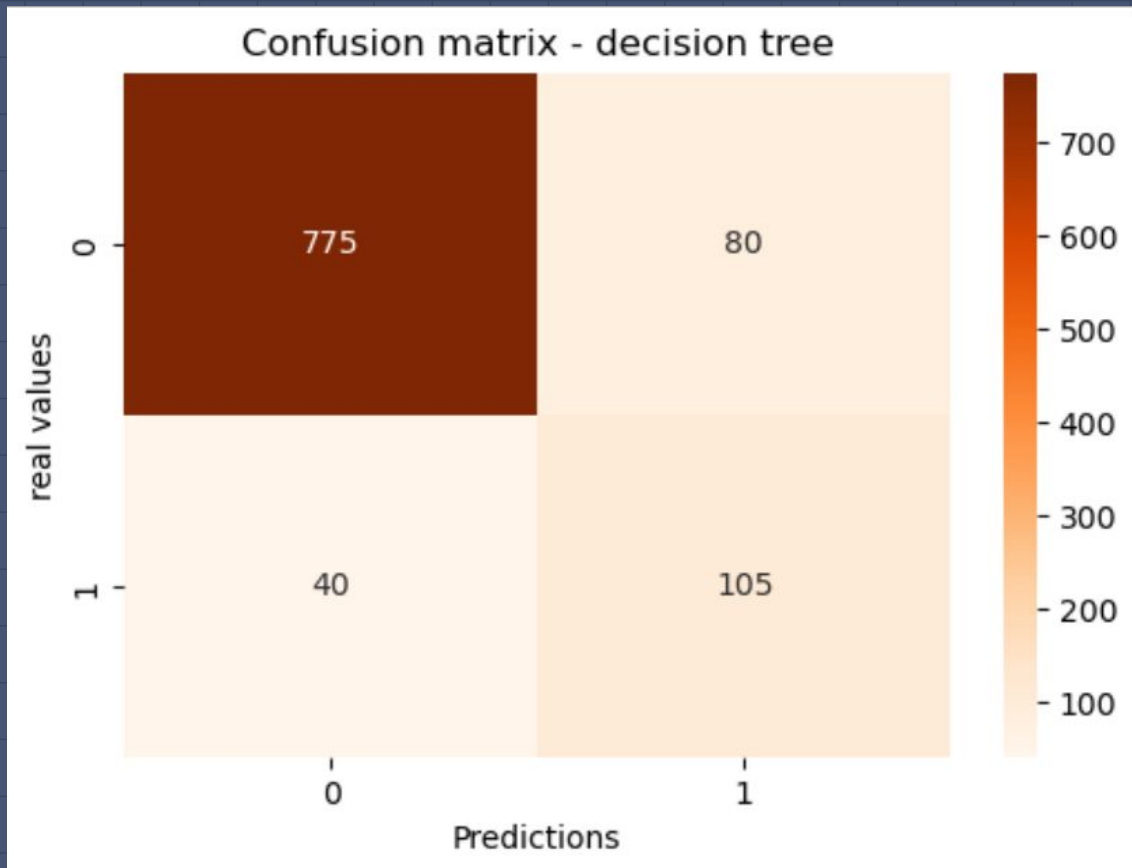# Confusion matrix for logistic regression
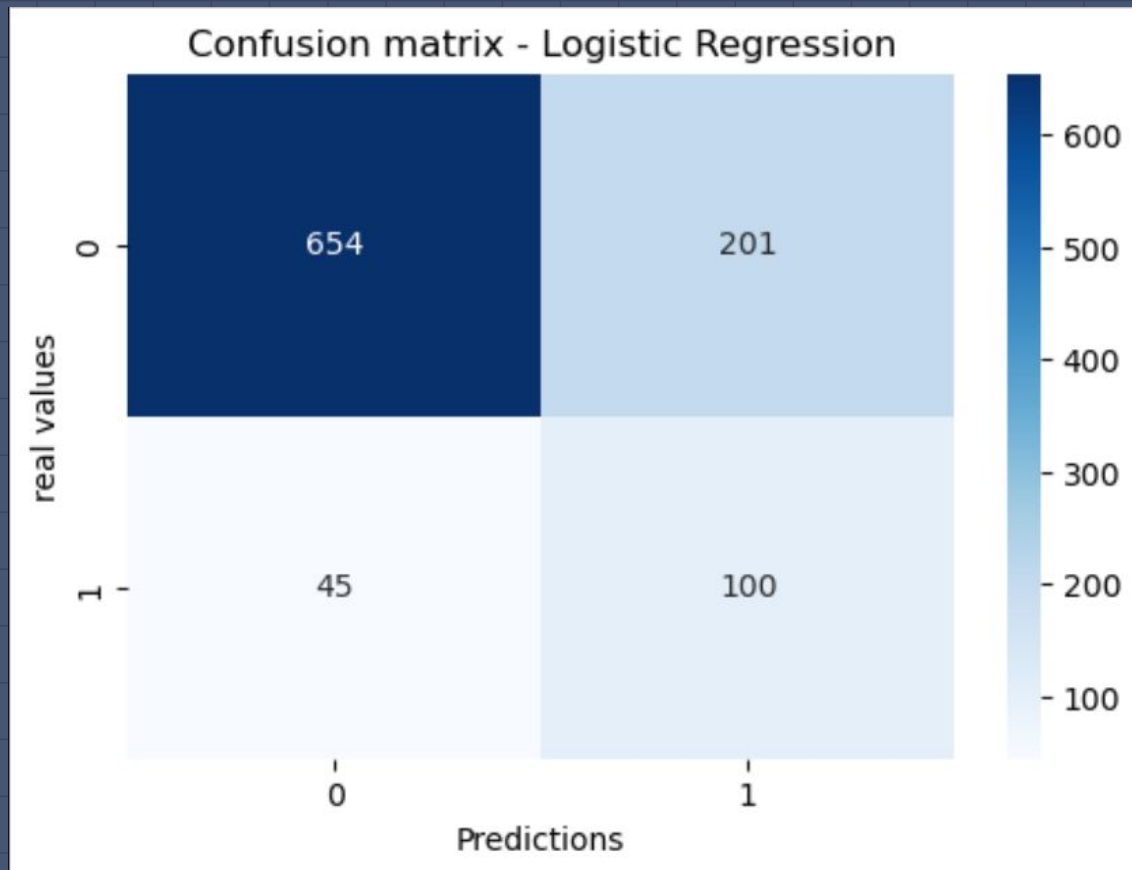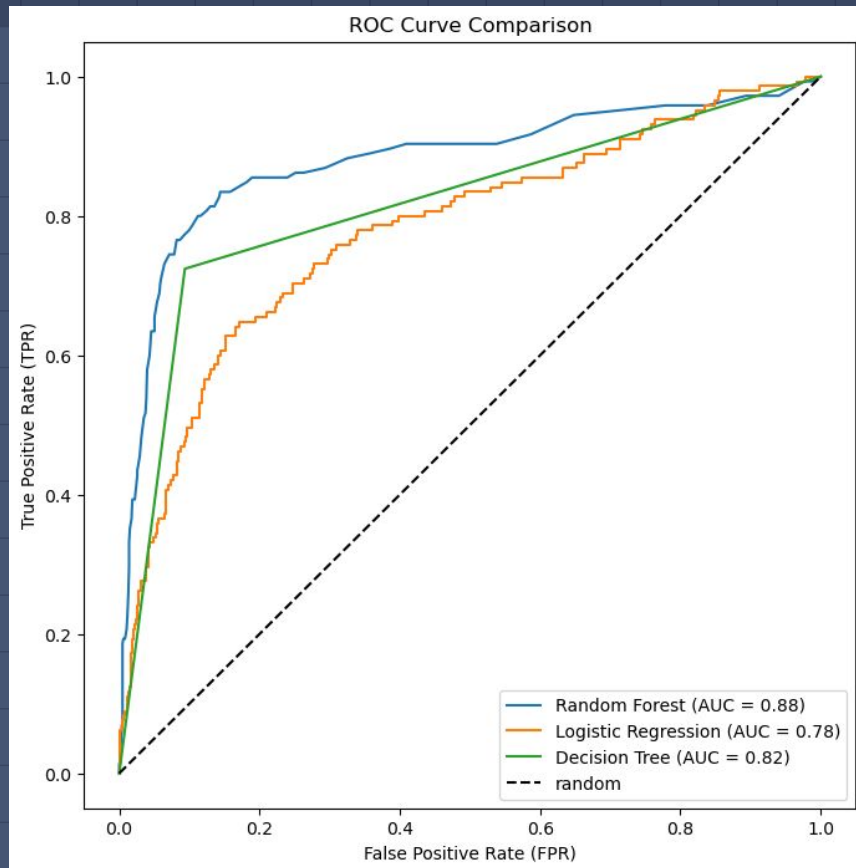
Confusion matrix for Random Forest algorithm

Confusion matrix for Decision Tree algorithm

ROC curve graph comparison

ROC Curve Comparison

Recommendations

- Adopt Random Forest Model
- Best performance for churn prediction (90% accuracy, recall 63%).
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Target At-Risk Customers

- Use model predictions to identify likely churners early.
- Offer loyalty programs, discounts, or personalized support.
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Improve Customer Service

- High number of service calls is a churn indicator.
- Train agents to resolve issues faster and proactively follow up.

NEXT STEP

STEP 1	STEP 2	STEP 3

- **Continuous Monitoring**
- **Retrain the model regularly with new data.**
- **Track churn trends to adapt marketing and service strategies.**

THANKS!

Any questions?

You can find me at

- www.linkedin.com/in/alberto sylveus
- albertosylveus@gmail.com