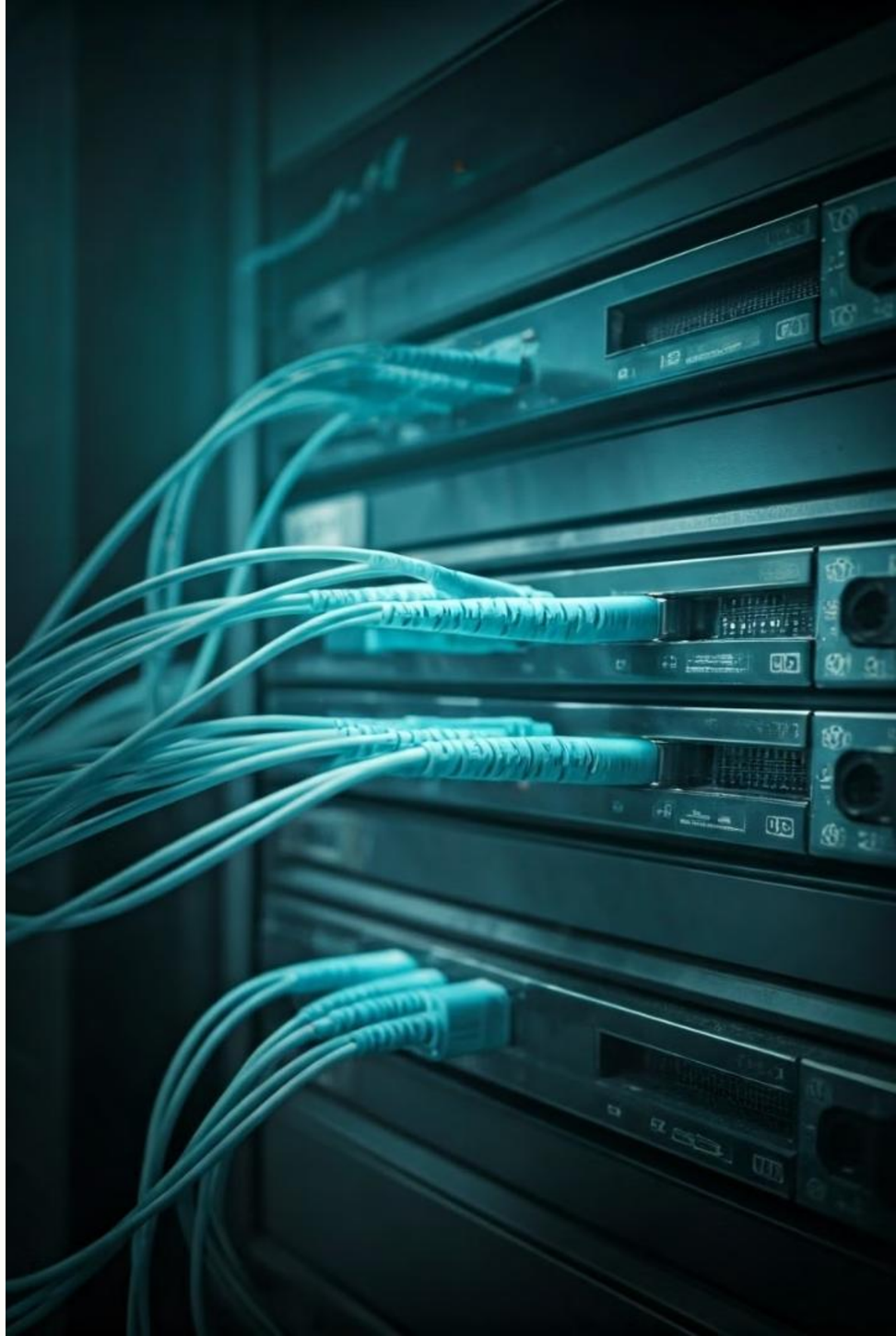
Telecom Churn Prediction: A Data Science Project

This presentation outlines a data science project focused on predicting telecom churn. We will cover the project from data exploration to model deployment.

by Hrishikesh Das



Introduction to Telecom Churn

What is Churn?

Churn refers to customers discontinuing their service. High churn rates can significantly impact revenue.

Why it Matters?

Understanding churn is critical for customer retention. Proactive measures can minimize loss.

The Importance of Churn Prediction

1 **Cost Reduction**

Retaining customers is cheaper than acquiring new ones. Targeted interventions save marketing dollars.

2 **Revenue Stability**

Predicting churn helps maintain stable revenue streams. Minimize unexpected customer departures.

3 **Improved Satisfaction**

Address issues before customers decide to leave. Boost loyalty with enhanced service.

Data Preparation and Preprocessing

Understanding Data

There were ‘99999’ records and ‘226’ features. Therefore, we filtered out the `High Value Customers` (recharge amount > 70%)

Data Cleaning

Address missing values and outliers for better data quality. Ensure accuracy for modeling.

Transformation

Convert data into appropriate formats for modeling. Enhance data reliability and consistency.

Feature Engineering and Selection

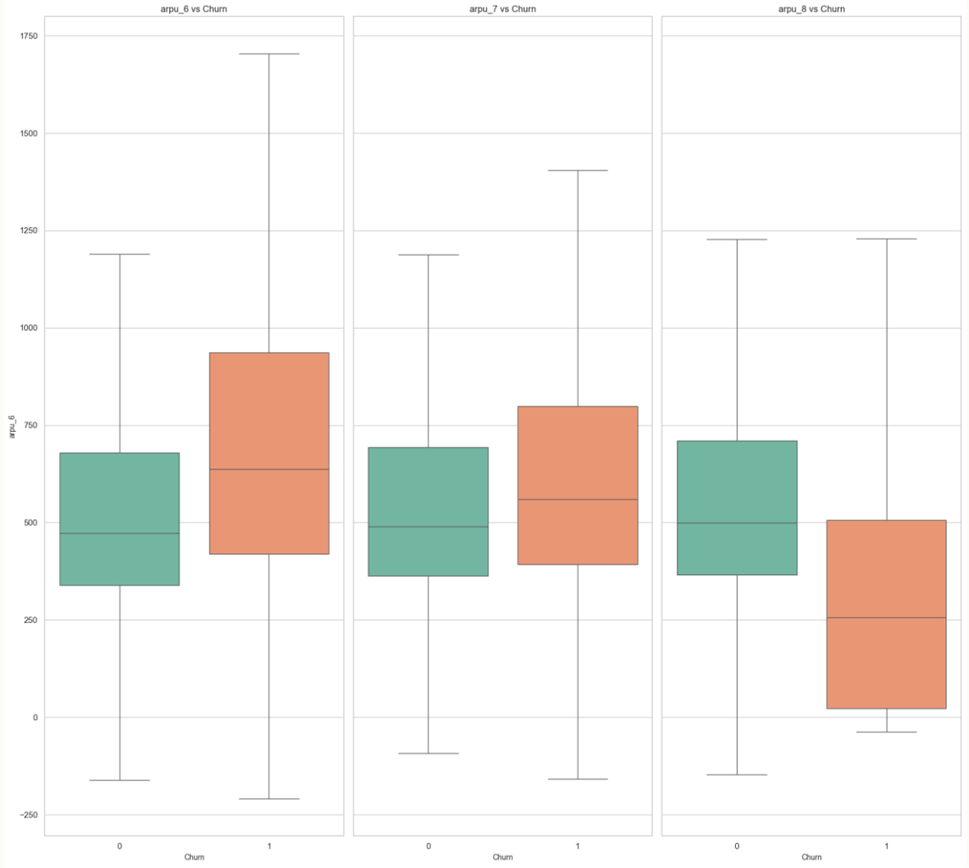
Enhance model accuracy. Choose the most relevant features.

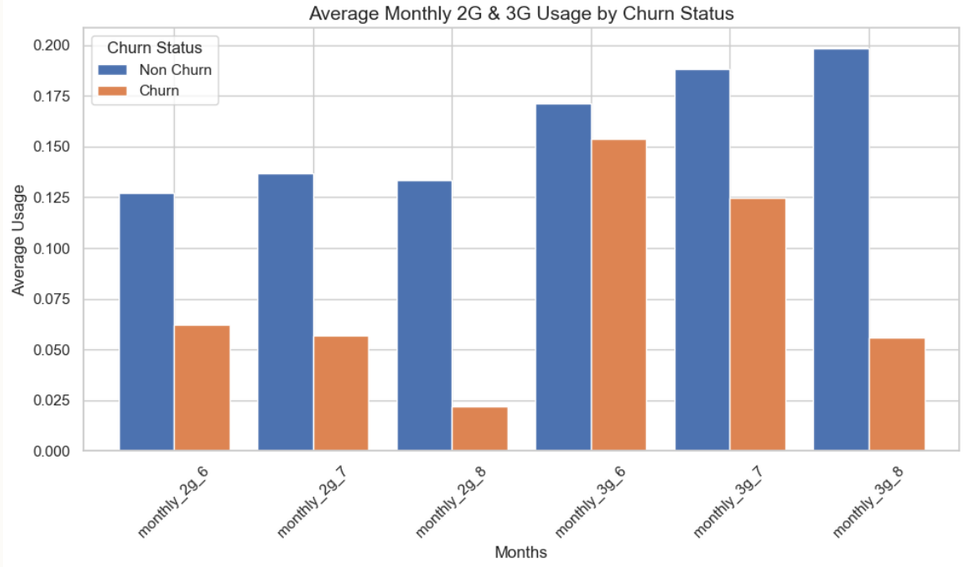
Feature Selection

After analyzing the Data we found that almost all the features followed a similar pattern. ‘June’ and ‘July’ months are the Good months where there is a lot of activity going on, but in ‘august’ month there seems to be a drop in usage mostly by the ‘Churn category’.

Feature Creation

We than combined the features so that we can also reduce the number of features without removing the importance of the features. Therefore, created a Trend based on our analysis





Key Features

Age on Network

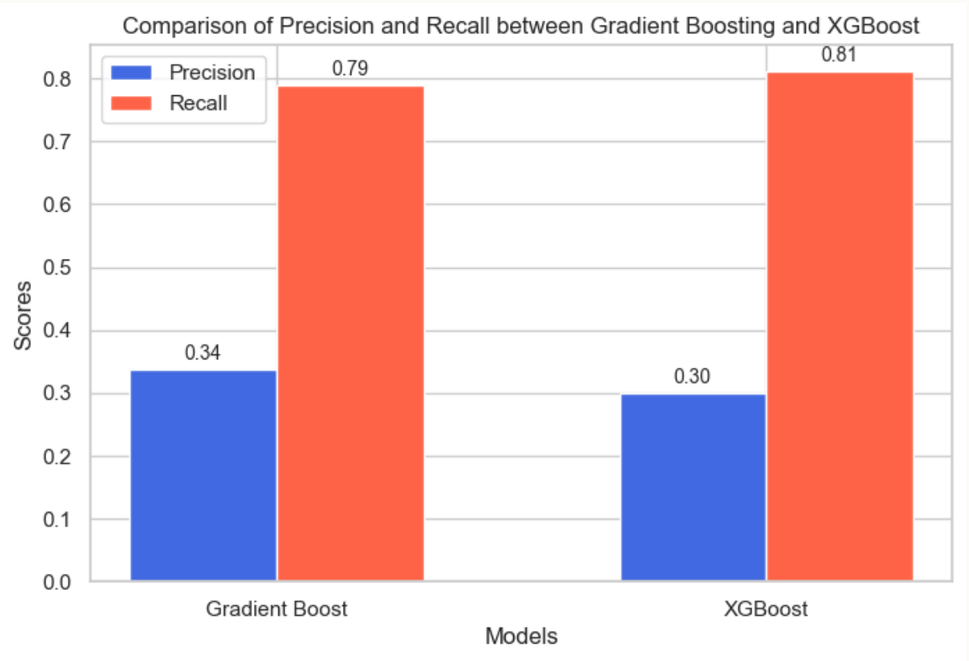
Customers with a longer “Age of Network” are less likely to churn.

Call Volume

Call duration, data used, and service tenure matter.

Recharge Amount

Recharge Amount can reveal risk, recharge amount trends are a good insights on churn.



Model Building and Evaluation (After Tuning)

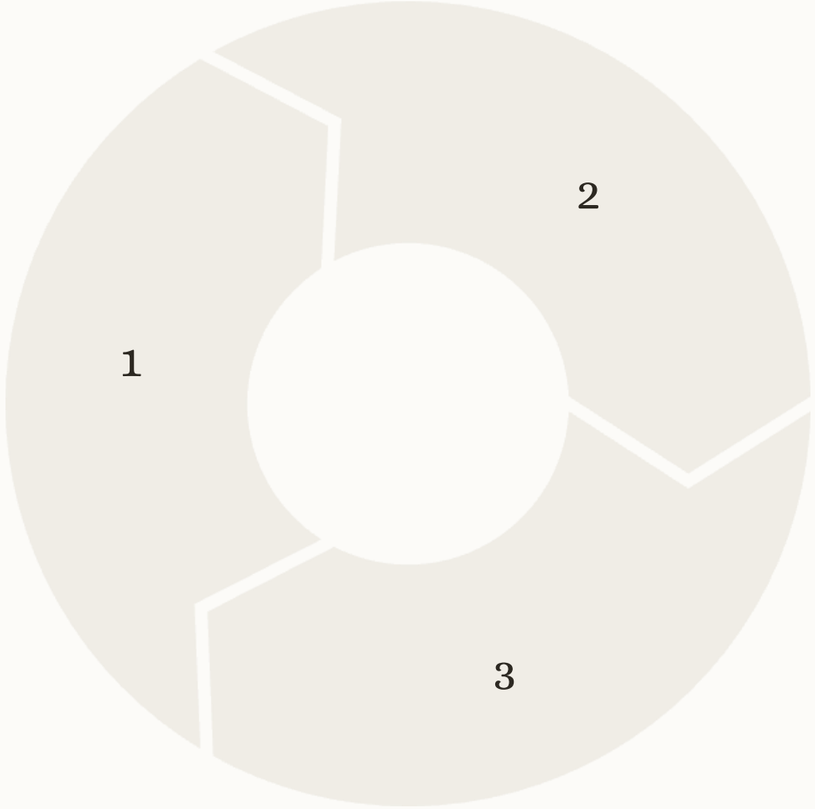
Model Type	Accuracy	Recall
Gradient Boosting	88%	79%
XGBoost	86%	81%

We built and evaluated several models. XGBoost gives the highest recall value; we are considering a model based on ‘recall performance’ because we want to identify most churners and can take action before they leave.

Interpreting the Results

Key Drivers

Identify factors. High call volume, Data Volume users and recharge amount.



Insights

Understand churn patterns. Like declining trend in Service usage. Declining trend indicates churn.

Actionable Items

Implement effective retention strategies. Reduce churn impact.

Strategies to Reduce Customer Churn

1 **Enhance Customer Engagement**

Regularly interact with customers through personalized offers, loyalty programs and rewards. Identifing customers with early sign of churn.

2 **Target Retention Campaign**

Focus on customrs with decreasing trends in outgoing calls and incoming calls as these are strong churn predictor.

3 **Offer Loyalty Programs**

Reward long-term customers with exclusive benefits. Encourage continued engagement and reduce churn.

4 **Optimize Pricing strategies**

Offer Flexible plans that adapt to changing customer behavior, especially during the Action Phase.