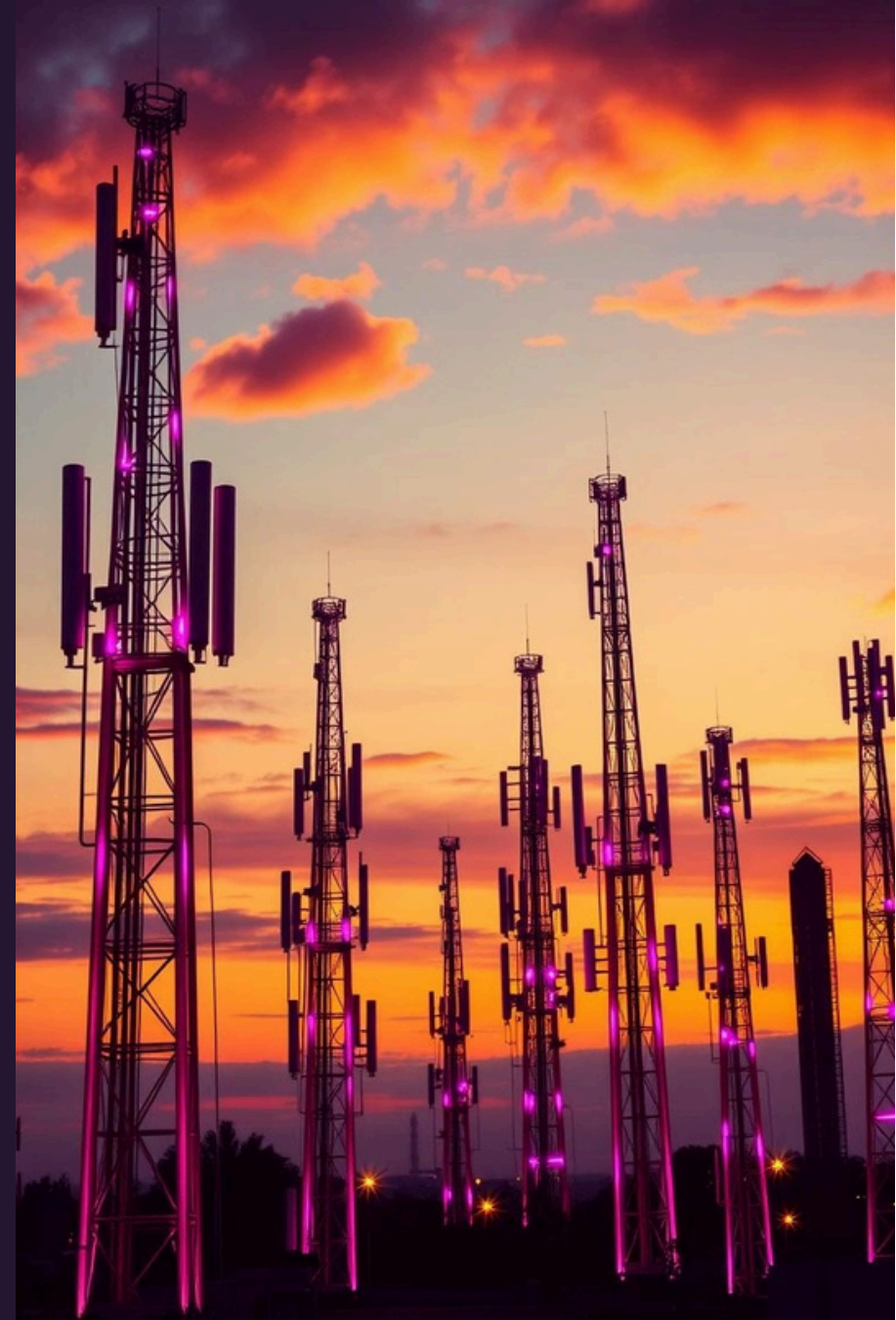
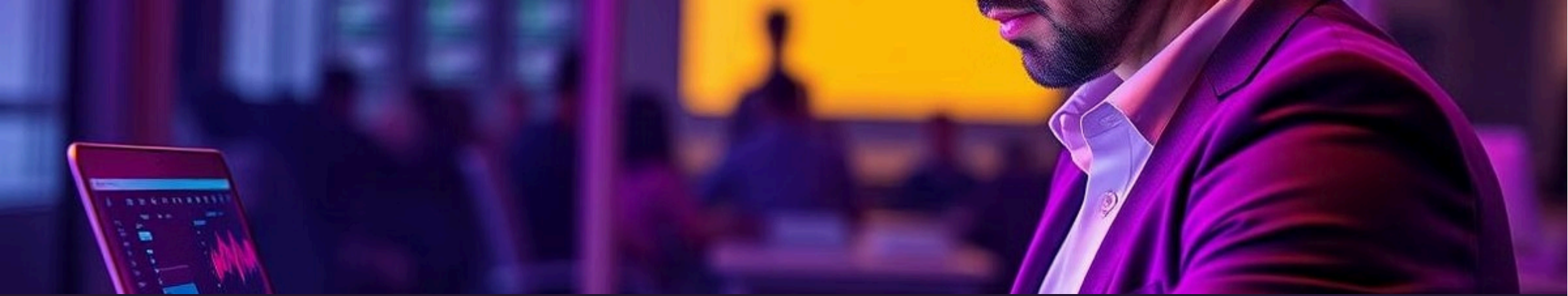


Customer Churn Analysis for the Telecom Industry

Presented by Rudraksh Gupta





Understanding Customer Churn

What is Churn?

Customers stopping business with a company.

Industry Impact

Critical issue affecting revenue and profits in telecom.

Retention Strategy

Identifying at-risk customers enables proactive retention.



Project Objectives

Predict Churners

Analyze data to identify likely churn customers.

Key Factors

Identify main contributors to customer churn.

Actionable Insights

Provide strategies for effective customer retention.

Predictive Models

Develop models to spot at-risk customers early.

Data Overview

Dataset

7,043 customer records from Kaggle Telecom Churn dataset.

- Customer ID: Unique identifier
- Tenure: Customer longevity
- Monthly Charges: Monthly billing amount
- Total Charges: Cumulative billing
- Churn: Target variable (Yes/No)

Preprocessing

Missing values imputed, irrelevant columns removed, one-hot encoding applied.

Churn Distribution & Analysis

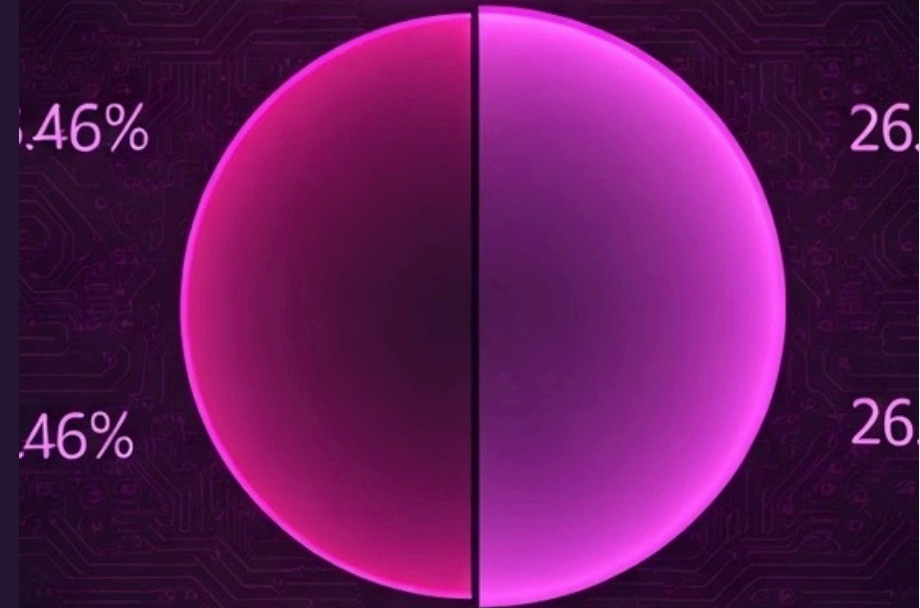
Churn Rate

73.46% customers stayed, 26.53% churned.

Data Challenge

Imbalanced dataset requires careful modeling.

CUSTOMER CHURN RATE



DATA CHALLENGE: IMBALANCED
IMBALANCED DATASET

Exploratory Data Analysis

Visualizations

- Confusion Matrix ROC Curve
- Histograms of Tenure and Charges
- Box Plots comparing churn groups
-

Customer Segments

- Bar Plots by Contract Type
- Internet Service Options
- Payment Methods



Modeling Approach & Performance

1

Models Used

- Logistic Regression
- Decision Tree
- Random Forest
- Gradient Boosting Machine

2

Top Metrics

- Decision Tree Accuracy: 87.67%
- Random Forest Accuracy: 85.67%
- Decision Tree Precision: 89.86%
- Random Forest AUC-ROC: 92.06%



Key Insights & Recommendations

1

Findings

Decision Tree and Random Forest performed best.

Technical issues drive churn; segments show varied patterns.

2

Recommendations

- Target retention for high-risk customers.
- Address technical problems proactively.
- Personalize offers for at-risk groups.
- Use early warning system with predictive models.