# Project Report: Exploratory Data Analysis (EDA)  Telecom Customer Analysis

## Project Overview

---

This project focuses on Exploratory Data Analysis (EDA) to understand customer behavior and churn patterns in a telecom dataset. The goal is to extract insights from the data to aid in decision-making processes for customer retention and business growth.

## Dataset Used

---

- Dataset Name: Telecom Customer Data
- Format: CSV
- Features: CustomerID, Gender, SeniorCitizen, Tenure, MonthlyCharges, TotalCharges, Churn, and others.

## Tools and Libraries

---

- Programming Language: Python
- Libraries Used:
  - Pandas  for data manipulation and analysis
  - NumPy  for numerical operations
  - Matplotlib and Seaborn  for data visualization

## Key Steps Performed

---

1. Data Cleaning
   - Handled missing values in the TotalCharges column.

- Converted data types where necessary.

- Removed redundant or duplicate entries.

2. Univariate Analysis

- Studied distributions of individual features such as tenure, MonthlyCharges, and Churn.

- Used histograms, bar plots, and value counts.

3. Bivariate & Multivariate Analysis

- Explored relationships between Churn and other features like Contract, InternetService, and TechSupport.

- Used heatmaps and boxplots to detect correlations and outliers.

4. Insight Generation

- Identified that customers with month-to-month contracts and no tech support were more likely to churn.

- Observed that senior citizens had a higher churn rate compared to others.

Visualizations

---

- Bar Charts: Showed the impact of categorical features on churn.

- Box Plots: Highlighted variation in charges among customers who churned vs. those who didnt.

- Heatmap: Displayed correlation matrix for numerical features.

Key Insights

---

- High Churn Risk: Month-to-month contracts, higher monthly charges, and lack of tech support are linked to churn.

- Retention Opportunity: Annual contracts, bundling services, and offering discounts may help reduce churn.

GitHub Repository

---

Check out the full project code and visuals here:

[GitHub Repo Link]

Feedback Welcome!

---

Feel free to explore the notebook and share your feedback or suggestions.

I'm always looking to improve and learn more in the field of data analysis.