

# **Telco Customer Churn Report**

## **Introduction**

Customer churn is a significant concern for telecom companies, directly impacting revenue and growth. This project analyzes customer churn using the "WA\_Fn-UseC\_-Telco-Customer-Churn.csv" dataset, aiming to identify key factors contributing to churn and provide actionable recommendations to reduce it.

## **Abstract**

The project leverages data analytics and machine learning techniques to predict customer churn. By examining customer demographics, service usage, and payment details, the analysis uncovers patterns and risk factors associated with churn. The findings support strategic decision-making to enhance customer retention.

## **Tools Used**

- **Python:** Data analysis and modeling
- **Pandas, NumPy:** Data manipulation
- **SQLite3:** Data Aggregation
- **Matplotlib, Seaborn:** Visualization
- **Scikit-learn:** Machine learning
- **ELI5:** Used to interpret predictions
- **PowerPoint:** Report presentation
- **PDF:** Final documentation

## **Steps Involved in Building the Project**

### **1. Data Loading and Cleaning**

- Imported the dataset using Pandas.
- Handled missing values and converted data types as needed.

### **2. Exploratory Data Analysis (EDA)**

- Analyzed churn rates by gender, contract type, tenure, and payment method.
- Visualized key trends (e.g., higher churn among month-to-month contract customers and those paying via electronic check).

### **3. Feature Engineering**

- Encoded categorical variables.
- Created new features such as tenure groups.

#### **4. Model Building**

- Split data into training and test sets.
- Built classification models (e.g., Logistic Regression, Random Forest) to predict churn.
- Evaluated models using accuracy, precision, recall, and ROC-AUC.

#### **5. Insights Extraction**

- Identified top predictors of churn: contract type, tenure, monthly charges, and payment method.

#### **6. Reporting**

- Summarized findings and recommendations in PowerPoint and PDF formats.

### **Conclusion**

The analysis reveals that customers with month-to-month contracts, higher monthly charges, shorter tenure, and those using electronic check payments are more likely to churn. By focusing retention efforts on these segments, telecom companies can significantly reduce churn rates and improve profitability.