TonnieD / Churn-Prediction

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Predict whether a customer will churn (leave the telecom service) based on usage and account data.

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README

Telecom Customer Churn Prediction

1. Project Overview

This project explores customer churn in a telecom company. The goal is to analyze customer behavior, identify patterns associated with churn, and build a model that predicts which customers are likely to leave.

2. Business Problem

As a stakeholder:
You're a Customer Retention Manager at a telecom company. You've noticed a rise in customer churn over the last quarter. The company wants to reduce churn by identifying at-risk customers early and intervening with retention strategies.

Objectives:

- Understand which factors most influence churn
- Build a model to predict the likelihood of churn
- Provide actionable recommendations to reduce churn

3. Dataset Description

Source: Kaggle - Telco Customer Churn

The dataset contains 21 columns including:

- Customer demographics
- Account information
- Services subscribed
- Monthly charges
- Whether they churned (`Churn`)

Key Features

Column	Description
`customerID`	Unique customer identifier
`gender`	Customer's gender
`SeniorCitizen`	Whether the customer is a senior (1) or not (0)
`Partner`	Has a partner (Yes/No)
`Dependents`	Has dependents (Yes/No)
`tenure`	Months with the company
`PhoneService`	Has phone service (Yes/No)
`MultipleLines`	Has multiple phone lines
`InternetService`	DSL, Fiber optic, or None
`OnlineSecurity` , `OnlineBackup` , `DeviceProtection` , `TechSupport`	Add-on services
`StreamingTV` , `StreamingMovies`	Streaming services subscribed
`Contract`	Contract type (Month-to-month, One year, Two year)
`PaperlessBilling`	Receives paperless billing (Yes/No)
`PaymentMethod`	Method of payment
`MonthlyCharges`	Monthly bill amount
`TotalCharges`	Total bill amount

Column	Description
Churn	Target: whether the customer left (Yes/No)

📊 Project Report / Presentation Structure

1. Introduction

- Brief overview of the telecom industry and churn
- Importance of customer retention in a competitive market
- High-level summary of the dataset (e.g., 7,043 customers, 21 features)

2. Business Problem & Objectives

- Stakeholder perspective: rising churn despite competitive offerings
- Current churn rate (26.5%) is unsustainable
- Project Objectives:
  - Understand drivers of churn
  - Predict customers at risk
  - Recommend retention strategies

3. Data Analysis

- Dataset overview and cleaning process
- Exploratory Data Analysis (EDA) insights
  - Demographic trends
  - Service usage differences
  - Contract/payment patterns
- Visual comparisons between churned and retained customers

4. Modeling & Results

- Model selection and why (e.g., Logistic Regression, Random Forest)
- Training & testing process
- Model performance (Accuracy, Precision, Recall, F1-score, ROC-AUC)
- Most important features driving churn

5. Key Findings & Insights

- Summary of what influences churn the most
- Any surprising or actionable patterns found
- High-risk customer profiles

6. Business Recommendations

- Strategies to reduce churn (e.g., loyalty programs, service bundling)
- Suggested improvements to customer experience
- How to use the model in operations

7. Conclusion

- Final recap of the problem, solution, and impact

- Next steps or possible project extensions (e.g., real-time churn alerts)

8. Build a Streamlit Demo

- Build a demo app using streamlit

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Languages

Jupyter Notebook 99.7% Python 0.3%