Customer Churn Prediction

Objective:

To build a machine learning model that predicts whether a customer is likely to leave (churn) or stay based on demographic and usage data.

Project Overview:

Customer churn prediction is a critical task for companies to identify at-risk customers and take retention measures. In this project, a predictive model was developed to estimate churn probability based on customer attributes like age, gender, tenure, and monthly charges.

Tasks Performed:

• Collected and preprocessed the dataset.

• Performed exploratory data analysis (EDA) to identify churn-related patterns.

• Applied machine learning models such as Logistic Regression and Random Forest for prediction.

• Evaluated models using accuracy and classification metrics.

• Built an interactive web app using Streamlit to allow users to input customer details and see churn predictions in real-time.

Technologies Used & Justification:

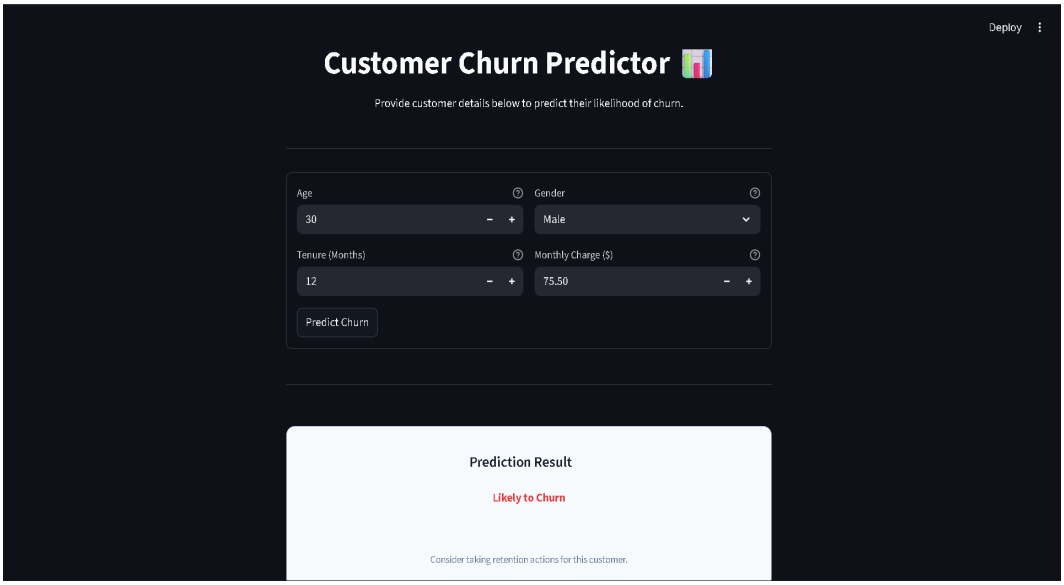
• **Python:** For data analysis and machine learning model development.
• **Pandas & NumPy:** For data handling and preprocessing.
• **Scikit-learn:** For model building and evaluation.
• **Matplotlib & Seaborn:** For data visualization.
• **Streamlit:** For developing an easy-to-use, interactive web interface.
• **GitHub:** For version control and project hosting.

Python provides robust libraries for data science and machine learning, while Streamlit allows quick deployment of ML models as interactive web applications without requiring complex frontend development.

Outcome:

An interactive web-based application that predicts customer churn likelihood based on user input. It helps businesses proactively identify customers who might leave and take preventive actions.

Output Screenshot:



Conclusion:

The project successfully demonstrated how machine learning can be integrated with web applications to solve real-world business problems such as customer retention.