Customer Churn Prediction Report

1. Predictive Model Overview

The predictive model was trained using the Telco Customer Churn Dataset with 19 features.

It uses the XGBoost classifier to predict whether a customer is likely to churn, and also assigns a churn probability score between 0 and 1.

The trained model is saved as 'xgboost_model.pkl'.

2. Streamlit Dashboard

The UI allows users to upload new customer data and get real-time churn predictions.

- Input: CSV file containing 19 customer features.
- Output: Prediction (Yes/No) and Churn Probability.
- Exportable results: CSV format.

To run:

```
streamlit run UI.py
```

3. Evaluation Metrics

The model was evaluated using accuracy, precision, recall, F1-score, and ROC-AUC.

- Confusion Matrix shows the count of correct and incorrect predictions.
- ROC-AUC: A high score indicates strong model performance.
- Feature Importance: Shows key drivers like tenure, contract type, and monthly charges.

4. Business Recommendations

Based on the model insights:

- Customers with long-term contracts are less likely to churn. Recommend offering yearly plan discounts.

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- Fiber optic internet users show higher churn. Improve their experience.
- High monthly charges correlate with churn. Consider loyalty benefits or flexible pricing.
- Lack of tech support increases churn. Upsell support services as value-added offerings.

5. Supporting Files in Repository

- model_training.ipynb: EDA, feature engineering, and training pipeline.
- UI.py: Streamlit app for customer interaction.
- xgboost_model.pkl: Trained ML model.
- requirements.txt: Python dependencies.
- README.md: Full documentation and usage guide.