ML Engineer Assignment: Customer Churn Prediction

Your goal: Develop an end-to-end solution for predicting customer churn for a subscription-based service.

The dataset:

The '*telco_customer_churn_data.csv*' dataset encapsulates comprehensive details from a fictional telco company, involving 7043 customers. Each of the 21 columns represents a unique attribute, collectively offering insights into customer demographics, subscriptions, billing methods, service usage, and the critical churn status.

Columns information:

- *customerID*: A unique identifier assigned to each customer.
- *gender*: Whether the customer is a male or a female.
- *SeniorCitizen*: Whether the customer is a senior citizen or not (1, 0).
- *Partner*: Whether the customer has a partner or not (Yes, No).
- *Dependents*: Whether the customer has dependents or not (Yes, No).
- *tenure*: Number of months the customer has stayed with the company.
- *PhoneService*: Whether the customer has a phone service or not (Yes, No).
- *MultipleLines*: Whether the customer has multiple lines or not (Yes, No, No phone service.
- *InternetService*: Customer's internet service provider (DSL, Fiber optic, No).
- *OnlineSecurity*: Whether the customer has online security or not (Yes, No, No internet service).
- *OnlineBackup*: Whether the customer has online backup or not (Yes, No, No internet service).
- *DeviceProtection*: Whether the customer has device protection or not (Yes, No, No internet service).
- *TechSupport*: Whether the customer has tech support or not (Yes, No, No internet service).
- *StreamingTV*: Whether the customer has streaming TV or not (Yes, No, No internet service).
- *StreamingMovies*: Whether the customer has streaming movies or not (Yes, No, No internet service).
- *Contract*: The contract term of the customer (Month-to-month, One year, Two year).
- *PaperlessBilling*: Whether the customer has paperless billing or not (Yes, No).
- *PaymentMethod*:The customer's payment method (Electronic check, Mailed check, Bank transfer (automatic), Credit card (automatic)).
- *MonthlyCharges*: The amount charged to the customer monthly.
- *TotalCharges*: The total amount charged to the customer.
- *Churn*: Whether the customer churned or not (Yes or No).

Bonus task (Optional): Retention Incentive Generation using Pre-trained LLM.
- Integrate a pre-trained Language Model (e.g., GPT-3) and employ prompt engineering techniques for generating personalized retention incentives based on churn predictions from your model.
- Showcase a few examples of the generated retention incentives, demonstrating the effectiveness of prompt engineering in tailoring the LLM's responses to individual customer contexts.

Live Demo Deliverables:
- Interactive code demo: Showcase live code execution for data exploration, model development, and evaluation.
- Model deployment as REST API: Deploy the trained model using a framework and demonstrate real-time predictions.

Thank you for your efforts in completing the assignment. We wish you the best of luck!