Data Analytics with Python

Module-3

Assignment 2: Practical Introduction to Generative AI with Text Generation

Overview

The objective of this assignment is to get hands-on experience with Generative AI by building and testing a simple text generation model using the GPT API. Learner has to apply this technology to solve practical problems, simulating real-world business use cases in industries like telecommunications.

Task:

1. **Set Up a Generative AI Environment:**

    o Install and configure the OpenAI API or another Generative AI platform (e.g., Hugging Face's transformers) in Python.

    o Set up the environment and get the necessary API keys (e.g., OpenAI API Key).

2. **Create Text Generation Functionality:**

    o Write a Python script to connect to the GPT model (or another generative model) and implement a function that accepts a text prompt and returns generated text.

3. **Simulating a Business Scenario:**

    o Choose a real-world business scenario (e.g., telecom customer service, marketing, automated report writing, or content generation for websites). Define a specific use case for text generation in this context (e.g., generating responses for customer inquiries or summarizing a telecom service report).

4. **Test and Evaluate:**

    o Test your text generation function with multiple prompts related to your chosen scenario.

    o Evaluate the quality, relevance, and coherence of the generated text, and provide examples of successful and unsuccessful outputs. Modify the prompts or parameters to improve results where needed.

5. **Enhance with Prompt Engineering:**

   o Apply prompt engineering techniques to get better results from the model. Experiment with varying levels of detail, context, and format in the prompts to see how the output changes.

6. **Bonus Task:**

   o Incorporate multiple rounds of text generation, where the output of one step serves as input for another. For example, generate a customer service response, and then feed the response back into the model to simulate a multi-turn conversation.

Deliverables:

- Python script with text generation functionality and sample prompts.

- A report summarizing:

  o The setup process for the environment.

  o Use case description and relevance to the business scenario.

  o Examples of the generated text, including improvements made via prompt engineering.

  o Insights gained from the task, including potential applications and limitations in the business context.