

CCAS.4.3: Software Engineering

Assignment 4

Question 1

Initial Setup:

1. **Open Google Colab:** Create a new notebook.
2. **Enable GPU:** Go to *Runtime > Change runtime type* and select *T4 GPU*.

Create and test prompts: Experiment various models for this prompt and observe the outputs.

```
prompt_1 = "List the top three benefits of AI in healthcare."  
  
print(response_1)
```

Comparative Analysis:

- **Task 1:** Use different models (e.g., GPT-Neo 1.3B, GPT-Neo 125M) to generate responses to the same prompt.
- **Task 2:** Analyze the outputs in terms of detail, clarity, and relevance. Document the differences observed.

Analysis Questions:

- How does model size impact response quality?
- Which model performed best and why?
- Identify limitations such as verbosity in longer summaries or missing key points in shorter ones.

Question 2

1- Prompt Analysis:

- **Examine** the prompt below and identify the technique such as (zero-shot, context based, role based, etc.).
- **Prompt:** "Read the following product review and explain how the user's experience with the product might influence their opinion about recommending it to others. Include aspects of their satisfaction and any problems they faced: [Insert Review Text Here]."
- **Product Review:** "The product has a sleek design and functions well for basic tasks. However, the battery drains quickly, which makes it hard to rely on during travel. Overall, it's a decent product, but the battery issue is a drawback."

2- Evaluate the Prompt:

- Use the following criteria to evaluate the prompt and its potential response according to:

Context, Precision, Clarity, Sensitivity.

3- Testing and Improving the Prompt (Code Implementation):

- **Code Task:** Write code in Python to test the given prompt with Hugging Face Transformers, using a sample review as input.
- **Prompt Improvement:** After testing, suggest improvements to the prompt to increase clarity, precision, or context.
- **Re-evaluate:** After making improvements, run the code again with the updated prompt and provide a brief analysis of how the improvements impacted the response quality.

4- Submission:

- Submit your code, the original and improved prompt versions, and your evaluation.

Question 3

- Create a template-based form prompt for collecting feedback from users about recently launched product. The form should include fields for product name, feedback type(positive/negative/neural), and comments. Use appropriate placeholders for the user input and specify the maximum word limit for comments.

1- **Code:** Then write the code to run this prompt, improve and re-evaluate.