Prompt Engineering

Assignment 1: Basic Prompt Engineering for One Hour AI Solution (Beginner Level)

Objective: Create simple prompts that AI engineers at One Hour AI Solution could use to help explain AI concepts to clients.

Task: Write three different zero-shot prompts that would help an AI explain what One Hour AI Solution is to potential clients. Each prompt should:

- Be clear and specific
- Include relevant context
- Be between 2-4 sentences long

Example:

Prompt: You are an AI assistant for One Hour AI Solution. Explain to a potential client what One Hour AI Solution is, what services it provides, and the benefits of booking a session with an AI engineer. Keep your explanation friendly and under 100 words.

Submission Requirements:

1. Three different zero-shot prompts
2. For each prompt, provide a brief explanation (2-3 sentences) of why you structured it that way

Assignment 2: Interactive Client Session Simulation (Intermediate Level)

Objective: Create a few-shot prompt scenario that simulates how an AI engineer might interact with a client during a One Hour AI Solution session.

Task: Imagine you're an AI engineer for One Hour AI Solution. Create a few-shot prompt that demonstrates how to guide a client through discussing their AI problem and finding a solution. Your few-shot prompt should:

- Include 3 example interactions (question/answer pairs)
- Cover initial problem assessment, clarifying questions, and solution suggestions
- Be related to a specific type of AI challenge (e.g., data cleaning, model selection, etc.)

Example:

Few-shot prompt for helping a client with model selection:

Client: "I need to predict customer churn for my subscription service."

Engineer: "I understand you need to predict customer churn. Could you tell me what kind of data you have about your customers and their behavior?"

Client: "We have customer demographics, subscription duration, usage patterns, and support ticket history."

Engineer: "Thank you for that information. Based on your data types and prediction goal, we could use either a Random Forest or a Gradient Boosting model. Random Forest works well for balanced datasets with mixed feature types, while Gradient Boosting might give better performance if you have enough training data."

Client: "How would I know which one performs better for my specific case?"

Engineer: "We can implement both models and compare their performance using metrics like precision, recall, and F1-score. We can also use cross-validation to ensure the results are reliable. Would you like me to explain how we would implement this in your hour session?"

Submission Requirements:

1. A complete few-shot prompt with 3 example exchanges
2. A brief explanation of your approach (200-300 words)
3. Explanation of how this would help an AI engineer at One Hour AI Solution
4. Total time: 45-60 minutes

Assignment 3: Chain-of-Thought Solution Development (Advanced Level)

Objective: Create a detailed chain-of-thought prompt that demonstrates how an AI engineer would approach solving a complex problem for a One Hour AI Solution client.

Task: Develop a chain-of-thought prompt that shows the reasoning process an AI engineer would use to solve a moderately complex AI implementation problem. Your prompt should:

- Focus on a specific AI challenge that could be addressed in a one-hour session
- Include clear step-by-step reasoning
- Demonstrate how breaking down complex problems improves solution quality
- Include considerations for time constraints (since sessions are limited to one hour)

Example:

Chain-of-thought prompt for implementing a recommendation system in one hour:

Problem: A client wants to implement a basic recommendation system for their e-commerce platform during a One Hour AI Solution session.

Let's think about this step by step:

Step 1: First, I need to understand what data the client has available. The most important data for recommendations would be:

- User purchase history

- Product viewing history

- Product categories and attributes

- User demographic information if available

Step 2: Based on the one-hour constraint, I should recommend a simple but effective approach. The options are:

- Collaborative filtering (requires user-item interaction matrix)

- Content-based filtering (requires good product attribute data)

- Popularity-based recommendation (simplest, requires only purchase counts)

- Hybrid approach (more complex, might not fit in one hour)

Step 3: For a quick implementation within the hour limit, I would recommend starting with content-based filtering if they have good product attribute data, or a simple collaborative filtering approach if they have sufficient user-item interactions.

Step 4: I would outline the implementation steps:

- Data preparation and cleaning (15 minutes)

- Feature extraction and representation (15 minutes)

- Building the similarity computation (15 minutes)

- Implementation of recommendation generation (10 minutes)

- Testing with sample cases (5 minutes)

Step 5: I would also prepare suggestions for future improvements that the client could implement after our session:

- Adding user feedback mechanisms

- Incorporating temporal dynamics

- Implementing A/B testing framework

- Scaling the solution for larger datasets

Submission Requirements:

1. A complete chain-of-thought prompt for a specific AI problem
2. The prompt should include at least 5 logical steps in the reasoning process
3. A brief reflection (300-400 words) on how this type of prompt helps both the AI engineer and client understand the solution process
4. Discussion of how time constraints affect the solution approach