

Comparative Analysis of Naïve Prompting versus Basic Prompting Using ChatGPT

Aim:

- To evaluate how ChatGPT responds to two types of prompts: naïve (broad, unstructured) and basic (clear, detailed) across multiple scenarios. The goal is to measure the quality, accuracy, and depth of the generated responses.

Procedure:

1. Define the Two Prompt Types:

- **Naïve Prompts:** These prompts are vague, open-ended, or broad. They give little to no specific direction for the model, often leading to general or unfocused responses.
- **Basic Prompts:** These prompts are precise, structured, and provide clear instructions or context. They guide the model to produce more targeted, relevant responses.

2. Prepare Test Scenarios:

- Select different test scenarios to compare responses, including:
 - Creative writing (e.g., generating a short story).
 - Factual question answering (e.g., asking for historical information).
 - Summarizing a complex topic.
 - Providing recommendations (e.g., travel or shopping).
- For each scenario, create both a naïve and a basic prompt that addresses the same task but differs in clarity and structure.

3. Run the Experiments with ChatGPT:

- **Step 1:** Input the naïve prompt for each scenario and record the generated response.
- **Step 2:** Input the basic prompt for the same scenario and capture the corresponding response.
- **Step 3:** Repeat this process for each test scenario to build a set of comparative results.

4. Evaluate and Analyze Responses:

- **Step 1:** Compare ChatGPT's performance on naïve versus basic prompts, evaluating based on:
 - **Quality:** How well the response meets the user's needs.
 - **Accuracy:** The correctness of the information provided.
 - **Depth:** The level of detail and insight in the responses.
- **Step 2:** Identify any scenarios where naïve prompts work as effectively as basic prompts.

- **Step 3:** Examine if ChatGPT consistently generates superior results with basic prompts, noting areas where clarity impacts outcomes.

Definitions:

1. Naïve Prompts:

- **Definition:** Naïve prompts are open-ended, broad, or general questions. They offer little guidance and can lead to vague or unfocused answers.
- **Example:** "Write a story about an animal."

2. Basic Prompts:

- **Definition:** Basic prompts are detailed and structured, providing clear instructions or context to guide the response.
- **Example:** "Write a story about a fox that embarks on a journey through a magical forest to find a lost treasure."

Test Scenarios:

1. Scenario 1: Job Listing:

- **Basic Prompt:**
- Input: Marketing Manager with 5+ years of experience needed at TechCorp. Salary range \$70,000 - \$90,000. Full-time position. Apply by August 15, 2024.
- ChatGPT Output:
 - Job Title: Marketing Manager
 - Company: TechCorp
 - Experience Required: 5+ years
 - Salary Range: \$70,000 - \$90,000
 - Position Type: Full-time
 - Application Deadline: Apply by August 15, 2024.
- **Naïve Prompt:**
- Input: Job opening for a manager at TechCorp. 5+ years experience, salary up to \$90,000, apply before August 2024.
- ChatGPT Output:
 - Position: Manager
 - Company: TechCorp
 - Experience Required: 5+ years
 - Salary Range: Up to \$90,000
 - Application Deadline: August 2024

2. Scenario 2: Photosynthesis:

- **Basic Prompt:**

- Input: What is the process of photosynthesis? Please explain it in detail, including the role of chlorophyll, light, carbon dioxide, and water, and describe the resulting products.

- ChatGPT Output:

Photosynthesis is the process by which green plants and some other organisms use sunlight to synthesize foods from carbon dioxide and water. Chlorophyll, the green pigment found in plants, absorbs light energy, which drives the chemical reactions. The process occurs in two stages: the light-dependent reactions and the Calvin cycle.

- ****Light-dependent reactions****: In this phase, sunlight is absorbed by chlorophyll, which excites electrons and splits water molecules (H_2O), releasing oxygen (O_2) as a byproduct.

- ****Calvin cycle****: Carbon dioxide (CO_2) is absorbed, and through a series of reactions powered by the ATP and NADPH from the light reactions, glucose ($\text{C}_6\text{H}_{12}\text{O}_6$) is produced.

The overall products of photosynthesis are oxygen and glucose, essential for plant growth and energy.

- **Naïve Prompt:**

- Input: What is photosynthesis?

- ChatGPT Output:

- Photosynthesis is the process used by plants to convert sunlight into energy. It involves converting light energy into chemical energy in the form of glucose, using water and carbon dioxide, with oxygen being released as a byproduct.

3. Scenario 3: Summarization Example:

- **Basic Prompt:**

- Input: Summarize the key causes of World War I, focusing on the main political alliances, the assassination of Archduke Franz Ferdinand, and the role of militarism and imperialism in escalating tensions.

- ChatGPT Output:

World War I was triggered by a combination of long-standing political alliances, militarism, imperialism, and the assassination of Archduke Franz Ferdinand of Austria-Hungary. The assassination in June 1914 set off a chain reaction due to complex alliances between major powers, including the Triple Entente (France, Russia, and Britain) and the Triple Alliance (Germany, Austria-Hungary, and Italy).

Militarism contributed to an arms race, with nations building large standing armies and navies, while imperialism fueled competition for colonies and global influence. These factors, combined with nationalistic fervor, escalated tensions, leading to the declaration of war in July 1914.

- **Naïve Prompt:**

- Input: Why did World War I happen?

- ChatGPT Output:

World War I happened because of political tensions between European countries, competition for colonies, and the assassination of Archduke Franz Ferdinand.

4. **Scenario 4: Recommendation Example:**

- **Basic Prompt:**

- Input: Recommend a smartphone under \$500 with a focus on good camera performance, a long battery life, and regular software updates. Please include specific models and key features.

- ChatGPT Output:

For a smartphone under \$500 with excellent camera performance, long battery life, and regular software updates, here are some options:

1. **Google Pixel 6a**:

- **Camera**: 12.2 MP main camera, known for its computational photography and night mode.
- **Battery**: 4,410 mAh, offers up to 24 hours of battery life.
- **Software**: Runs on the latest Android with guaranteed updates for 3 years.

2. **Samsung Galaxy A52**:

- **Camera**: Quad-camera setup with 64 MP primary lens.
- **Battery**: 4,500 mAh, lasts all day with moderate use.
- **Software**: Receives regular security and system updates from Samsung.

3. **OnePlus Nord 2**:

- **Camera**: 50 MP camera with OIS, excellent for both daylight and low-light photography.
- **Battery**: 4,500 mAh, with 65W fast charging.
- **Software**: OxygenOS with regular updates for two years.

- **Naïve Prompt:**

- Input: Recommend a good phone under \$500.

- ChatGPT Output:

You could consider buying the Google Pixel 6a or the Samsung Galaxy A52. Both are good phones under \$500.

Deliverables:

1. Comparative Table:

- A table comparing the responses from both naïve and basic prompts across all scenarios.

2. Analysis:

- Impact of Prompt Clarity on Quality:
 - Naïve prompts often result in general, surface-level answers.
 - Basic prompts lead to more accurate, context-driven responses with greater relevance to the user's needs.
- Impact on Depth:
 - Basic prompts yield more in-depth answers, covering multiple aspects of the task, whereas naïve prompts usually provide minimal or broad insights.
- Impact on Accuracy:
 - Basic prompts consistently produce more accurate results due to the added clarity and context, while naïve prompts can lead to partial or vague answers.