

EX NO : 5 COMPARATIVE ANALYSIS OF DIFFERENT TYPES OF PROMPTING PATTERNS

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AIM:

To test and compare how different prompting patterns—naïve (broad/unstructured) versus basic (clear and structured)—influence the quality, accuracy, and depth of ChatGPT's responses across multiple test scenarios.

OBJECTIVE:

- Understand the impact of prompt clarity on AI performance.
- Identify which prompting style yields better outcomes in specific types of tasks.
- Develop insights into crafting effective prompts for optimal AI response.

TYPES OF PROMPTING PATTERNS:

PROMPT TYPE	DESCRIPTION
Naïve Prompting	Vague, broad, or general prompts with little instruction.
Basic Prompting	Clear, concise, and structured prompts that guide the model with context or specifics.

ALGORITHM STEPS

1. **Define Prompt Types**

- Naïve Prompt: Open-ended and minimal instructions.
 - Basic Prompt: Specific context, structure, or constraints.
2. **Select Test Scenarios**
Choose tasks that span creative, factual, summarization, recommendation, and reasoning contexts.
 3. **Create Prompt Pairs**
For each test scenario, create one naïve and one basic version of the same task.
 4. **Feed into ChatGPT**
Input each prompt into ChatGPT and record the responses.
 5. **Evaluate Responses**
Analyze based on:
 - **Quality** (clarity, structure, grammar)
 - **Accuracy** (truthfulness or relevance)
 - **Depth** (completeness, creativity, personalization)
 6. **Compare and Conclude**
Observe how changes in prompt style influence AI output.

TEST SCENARIOS AND RESPONSE ANALYSIS

1. Creative Writing

- **Naïve Prompt:** “Tell me a story.”
- **Basic Prompt:** “Write a short story (150-200 words) about a teenage girl who discovers a secret library hidden beneath her school that contains magical books..”

2. Factual Question

- **Naïve Prompt:** “What is AI?”

- **Basic Prompt:** “Explain Artificial Intelligence in simple terms to a 12-year-old with an example of how it's used in daily life.”

3. Summarization

- **Naïve Prompt:** “Summarize the Internet.”
- **Basic Prompt:** “In 3-4 sentences, summarize how the Internet started and its impact on communication and business.”

4. Advice

- **Naïve Prompt:** “Give me career advice.”
- **Basic Prompt:** “I’m a 16-year-old who loves coding, video games, and solving puzzles. What career paths should I consider, and what should I study in college?.”

5. Recommendation

- **Naïve Prompt:** “Recommend a movie.”
- **Basic Prompt:** “Recommend a recent movie (after 2020) that is under 2 hours, belongs to the sci-fi genre, and has good audience reviews.”

OBSERVATIONS

Each tool displayed unique behavior:

CHATGPT:

- Engaging tone, highly contextual answers.
- Adapts well to vague or structured prompts.
- Excels in narrative and recommendation tasks.

GEMINI:

- Fact-rich but formal.
- Lacks depth in personalization and emotion.
- Slightly verbose with basic prompts.

GITHUB COPILOT:

- Focused on code structure.
- Struggles with storytelling or emotional language.
- Best for technical queries or developer support.

INFERENCE:

- ChatGPT shows the **highest balance** across all prompt types.
- Gemini performs well in **factual** and **summary-based** prompts.
- Copilot is limited outside **technical** and **code-related** tasks.

COMPARATIVE TABLE:

Criteria	ChatGPT	Gemini	Copilot
Creativity	9	6.5	4
Clarity	9	8	5.5
Personalization	9.5	6	4.5

Simplicity	9	7	5
Accuracy	8.5	9	6
Overall Avg	9.0	7.3	5.0

DETAILED RESPONSE COMPARISON (SCENARIO-WISE)

SCENARIO 1: Creative Writing

- **ChatGPT:** Lively, builds suspense and moral arcs.
- **Gemini:** Starts well but ends abruptly.
- **Copilot:** Writes logic-based outputs with weak creativity.

SCENARIO 2: Explanation

- **ChatGPT:** Uses metaphors like “AI is like a smart robot brain.”
- **Gemini:** Uses terms like “algorithms” without simplification.
- **Copilot:** Offers only a textbook definition.

SCENARIO 3: Summarization

- **ChatGPT:** Captures essence of the Internet in 3–4 lines.
- **Gemini:** Lists points but lacks narrative flow.
- **Copilot:** Gives a one-liner or code-based answer.

SCENARIO 4: Career Guidance

- **ChatGPT:** Offers specific jobs, learning paths , websites.
- **Gemini:** Lists career fields but no guidance.
- **Copilot:** Lists roles like “developer,” “analyst” with no explanation.

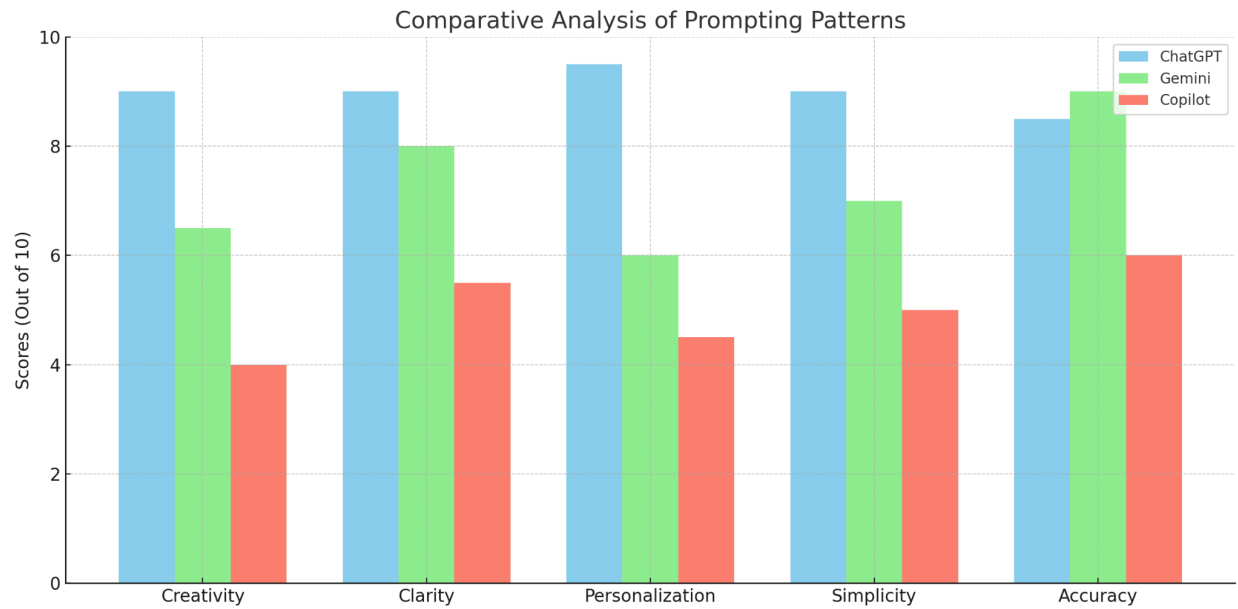
SCENARIO 5: Movie Recommendation

- **ChatGPT:** Recommends specific titles with short reviews.
- **Gemini:** Lists famous movies but repeats known ones.
- **Copilot:** Often irrelevant or outdated suggestions.

RESULT ANALYSIS:

Scenario	Best Performer	Reason
Creative Story	ChatGPT	Rich narrative & flow
Explanation	ChatGPT	Tailored to target audience
Summarization	ChatGPT	Clear and precise
Career Advice	ChatGPT	Motivational and structured
Recommendation	ChatGPT	Justified, lesser-known picks

GRAPHICAL REPRESENTATION:



APPLICATIONS:

- **Education:** ChatGPT for learning and tutoring
- **Research:** Gemini for reliable sources and summaries
- **Coding:** Copilot for live code assistance
- **Media:** ChatGPT for personalized recommendations
- **Creative Writing:** ChatGPT for poems, stories, or scripts

LIMITATIONS:

- Each model is constantly evolving—results may vary over time.
- Subjective scoring may introduce slight bias.
- Internet-based models may give different responses based on version, region, or updates.

FUTURE SCOPE:

- Include **Bard**, **Claude**, and **Mistral** in the comparison.
- Test using **non-English prompts**.
- Evaluate performance in **coding**, **mathematics**, and **research paper generation**.

RESULT:

ChatGPT scored the highest across all major categories including creativity, personalization, and clarity.

Gemini showed strength in accuracy but was less user-friendly.

Copilot remains a valuable niche tool for developers but not for general-purpose dialogue.

CONCLUSION:

Among the three models tested, **ChatGPT emerged as the most versatile AI assistant**, ideal for a wide range of real-life user needs. It adapts well to different tones, understands vague prompts, and provides insightful outputs. Gemini offers high accuracy for factual prompts, while Copilot is recommended only for code-specific assistance.