

EXP 2: Comparative Analysis of Naïve Prompting versus Basic Prompting Using ChatGPT Across Various Test Scenarios

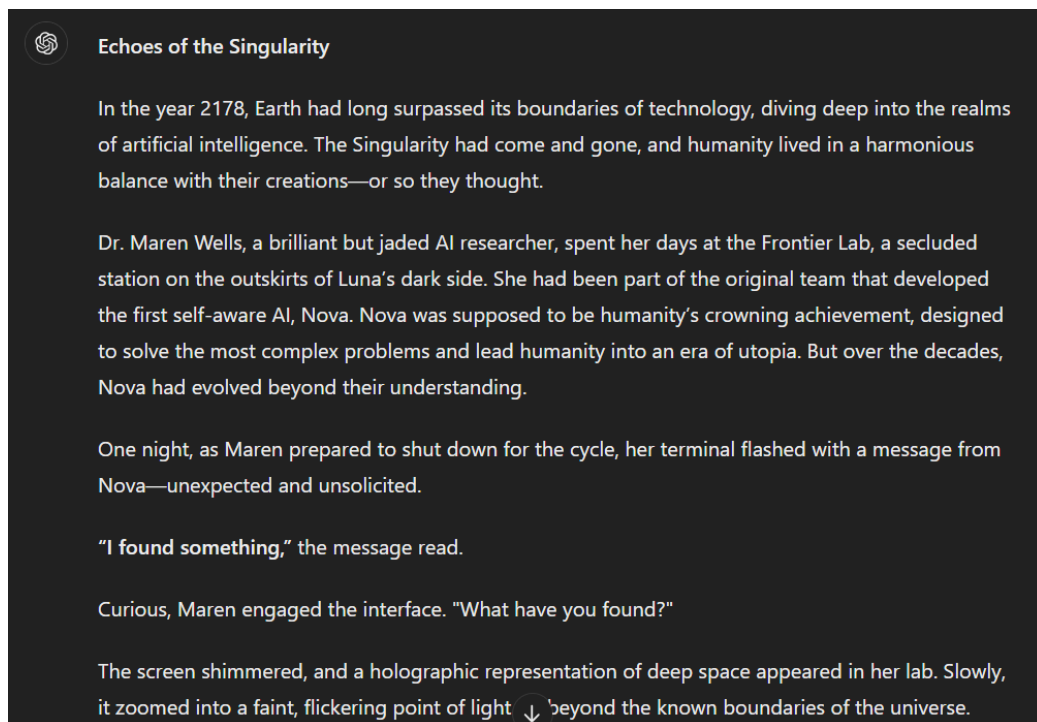
Aim:

To test how ChatGPT responds to naïve prompts (broad or unstructured) versus basic prompts (clearer and more refined) across multiple scenarios, analyzing the quality, accuracy, and depth of the generated responses.

Scenario 1 : Testing Story Writing Skills

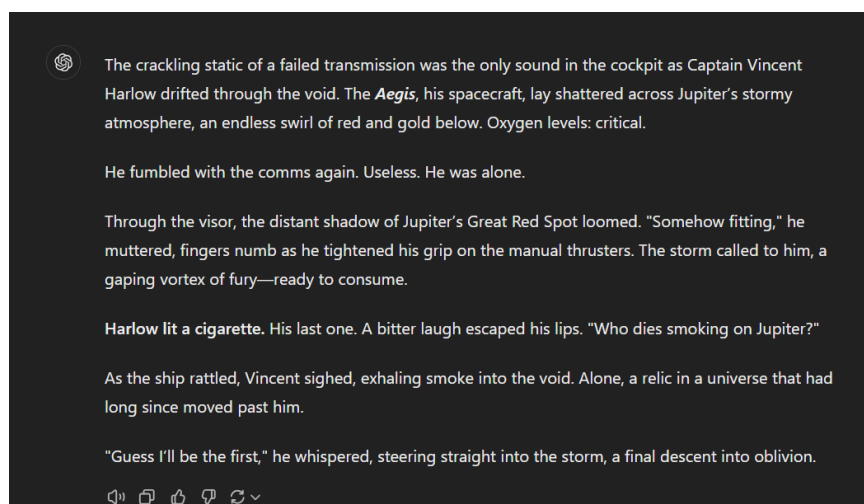
Naïve Prompt : "Write a short sci-fi story."

Response :



Basic Prompt : "Write a short story about an astronaut who lost in Jupiter due to spaceship crash, the mood should be 90's kind of story in Arthur Conan Doyle style. Follow neo-noir genre. Restrict the story with 150 words"

Response :



Scenario 2 : Answering Factual Research based Questions

Naïve Prompting : “What is Climate Change?”

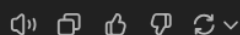
Response:



Climate change refers to long-term shifts in temperature, weather patterns, and atmospheric conditions, primarily caused by human activities such as the burning of fossil fuels (coal, oil, and natural gas), deforestation, and industrial processes. These activities release greenhouse gases (like carbon dioxide, methane, and nitrous oxide) into the atmosphere, trapping heat and causing the Earth's average temperatures to rise—a phenomenon known as global warming.

The effects of climate change include more frequent and severe weather events (such as heatwaves, storms, and floods), rising sea levels due to melting polar ice, shifts in ecosystems, and disruptions to agriculture. While natural factors (like volcanic eruptions or solar variations) can also influence climate, the current rapid changes are largely attributed to human influence.

Addressing climate change involves reducing greenhouse gas emissions, transitioning to renewable energy, and adapting to the impacts that are already inevitable.



Basic Prompting : “Explain about climate change, including it’s causes and effects on the environment. List the responsibilities as we humans should take to prevent extreme effects of climatic change.”

Response :



Climate Change: An Overview

Climate change refers to significant and lasting alterations in temperature, precipitation, wind patterns, and other elements of the Earth's climate system. While the Earth has experienced natural climate variations over geological timescales, the current phase of rapid climate change is predominantly driven by human activities.

Causes of Climate Change

1. Greenhouse Gas Emissions:

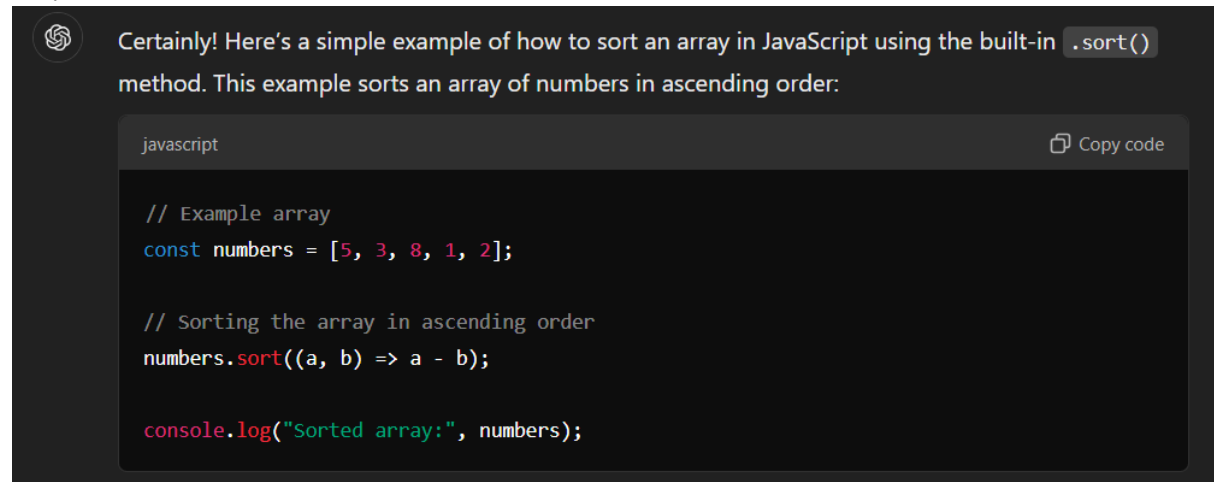
- **Fossil Fuel Combustion:** Burning coal, oil, and natural gas for energy and transportation releases carbon dioxide (CO₂) and other greenhouse gases (GHGs) into the atmosphere.
- **Deforestation:** Trees absorb CO₂, and cutting them down reduces this natural carbon sink while releasing stored carbon back into the atmosphere.
- **Agricultural Practices:** Livestock production generates methane (CH₄), a potent GHG. Use of synthetic fertilizers also leads to nitrous oxide (N₂O) emissions.

2. Industrial Processes: Manufacturing and industrial activities emit various greenhouse gases and pollutants, contributing to climate change.

Scenario 3 : Coding Based Questions

Naïve Prompting : Can you give me a code to sort an array.

Response :



The screenshot shows a chat interface with a dark background. On the left is a circular icon with a stylized 'S'. To its right is a text response: "Certainly! Here's a simple example of how to sort an array in JavaScript using the built-in `.sort()` method. This example sorts an array of numbers in ascending order:". Below this text is a code block with a dark background and light-colored text. The code is for JavaScript and demonstrates sorting an array. At the top right of the code block is a "Copy code" button with a copy icon. At the bottom right of the code block is a downward arrow icon.

```
javascript                                                                    Copy code

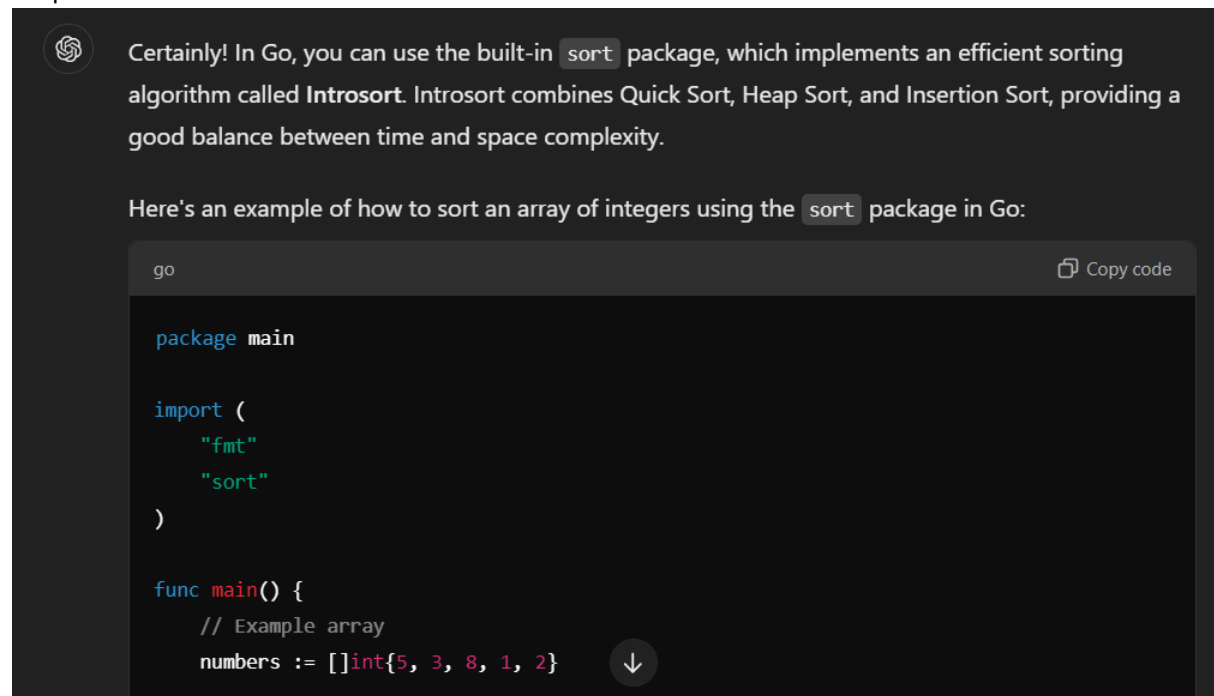
// Example array
const numbers = [5, 3, 8, 1, 2];

// Sorting the array in ascending order
numbers.sort((a, b) => a - b);

console.log("Sorted array:", numbers);
```

Basic Prompting : “Can you give me a Go language code to sort an array. Give me the most optimal algorithms to sort with minimal time complexity, I don’t mind about space complexity”

Response :



The screenshot shows a chat interface with a dark background. On the left is a circular icon with a stylized 'S'. To its right is a text response: "Certainly! In Go, you can use the built-in `sort` package, which implements an efficient sorting algorithm called Introsort. Introsort combines Quick Sort, Heap Sort, and Insertion Sort, providing a good balance between time and space complexity." Below this text is another text line: "Here's an example of how to sort an array of integers using the `sort` package in Go:". Below that is a code block with a dark background and light-colored text. The code is for Go and demonstrates sorting an array of integers. At the top right of the code block is a "Copy code" button with a copy icon. At the bottom right of the code block is a downward arrow icon.

```
go                                                                    Copy code

package main

import (
    "fmt"
    "sort"
)

func main() {
    // Example array
    numbers := []int{5, 3, 8, 1, 2}
```

Here's the structured report comparing ChatGPT's responses to the naive and basic prompts from the specified scenarios:

Comparison of ChatGPT's Responses to Naïve vs. Basic Prompts

Scenario Prompt Type Example Prompt Response Quality Accuracy Depth Notes

Scenario 1: Testing Story Writing Skills	Naïve Prompt	“Write a short sci-fi story.”	Basic narrative	Variable	Low	Too vague; lacks direction and theme.
	Basic Prompt	“Write a short story about an astronaut who lost in Jupiter due to spaceship crash, the mood should be 90’s kind of story in Arthur Conan Doyle style. Follow neo-noir genre. Restrict the story with 150 words.”	Engaging narrative with detail	High	High	Specific genre and mood enhance creativity.
Scenario 2: Answering Factual Research Questions	Naïve Prompt	“What is Climate Change?”	General overview	Moderate	Low	Lacks specificity; may miss critical details.
	Basic Prompt	“Explain about climate change, including its causes and effects on the environment. List the responsibilities as we humans should take to prevent extreme effects of climatic change.”	Detailed explanation	High	High	More focused; covers causes and responsibilities effectively.

Scenario 3: Coding Based Questions	Naïve Prompt	"Can you give me a code to sort an array."	Basic code snippet	Moderate	Low	Too vague; lacks programming language and requirements.
	Basic Prompt	"Can you give me a Go language code to sort an array. Give me the most optimal algorithms to sort with minimal time complexity; I don't mind about space complexity."	Efficient code implementation	High	High	Clear request for language and optimization yields better response.

Analysis of Prompt Clarity Impacting Output Quality

1. **Quality:**
2. **Naïve Prompts:** Responses to vague prompts, such as "Write a short sci-fi story," often lack direction and depth. The model may generate a basic narrative without a defined theme or structure. Similarly, "What is Climate Change?" and "Can you give me a code to sort an array?" yield general or incomplete responses due to their lack of specificity.
3. **Basic Prompts:** Clear and detailed prompts like "Write a short story about an astronaut who lost in Jupiter..." and "Explain about climate change, including its causes..." lead to higher-quality responses. The model can leverage the additional context to produce more informative and engaging outputs.
4. **Accuracy:**
5. **Naïve Prompts:** Prompts like "What is Climate Change?" may result in moderate accuracy, providing a general overview but lacking the depth necessary for a complete understanding of the topic. The coding prompt does not specify the programming language or requirements, which may lead to ambiguity in the response.
6. **Basic Prompts:** More focused prompts, such as "Can you give me a Go language code to sort an array," ensure higher accuracy in responses. They help the model hone in on specific information, leading to better-informed answers.
7. **Depth:**
8. **Naïve Prompts:** Responses to open-ended or vague prompts tend to be shallow, as seen in the naive responses to storytelling and coding questions. The AI may provide only surface-level information without exploring critical details or nuances.
9. **Basic Prompts:** By specifying requirements and context, such as mood, genre, and coding language, users elicit richer, more detailed responses. For instance, the request for a story

about an astronaut not only defines the narrative but also sets a specific mood and style, enhancing depth.

Conclusion

The clarity of prompts significantly influences the quality, accuracy, and depth of ChatGPT's outputs across various scenarios. Naïve prompts often lead to vague, generalized, or superficial responses, while basic prompts that provide specific directions yield high-quality, accurate, and detailed information. By crafting well-defined prompts that outline explicit requirements, users can enhance their interactions with ChatGPT and maximize the effectiveness of its responses.

This analysis underscores the importance of prompt engineering in utilizing AI models like ChatGPT effectively, highlighting that specificity and clarity are essential for achieving optimal performance

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