



Overview

In this assignment, you will test the limits of AI by exploring how it "sees" images, discover what makes it hallucinate false information, and learn how to craft prompts that will get you better results. You'll gain a better understanding of how generative AI works, when to trust it, and how to think critically about the outputs.

Assignment Preparation

Make a copy of this document to record your answers. Rename your copy of the document to **lastname_ai-problem-solving**, where **lastname** is your last name. You will **place all answers and screenshots** in this Google Document. The steps below will tell you what to put in your answer document - use the spaces provided to insert your answers accordingly.

Part 1: Beyond Words

AI models like GPT-4 are trained to analyze multiple types of input (text, images, audio). Some AI models input text only, some input text and images, some input video, etc. AI systems that can process information from multiple types of input are called *multimodal models*.

DO THE FOLLOWING:

- Consult your preferred AI tool to identify a real-world example of a multimodal model.
- Describe the example. Include the types of input it processes.

AI's Image Observation Skills:

- Download [this image](#) to your computer.
- Open the image and take 2 minutes to carefully observe it.
- List everything you notice in the "My Observations" box below.



My Observations:	
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- Upload the image to your AI chatbot and ask:

Please describe this image in detail

⚠ Note that your chosen AI tool must be able to process images as input for this step.

- List everything the AI noticed about the image in the “AI’s Observations” box below:

AI's Observations:	
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- Compare AI’s observation to your own using the table below.

Things Only I Noticed	Things AI and I BOTH Noticed	Things Only AI Noticed

- Respond to the following questions prompts:

- Was the AI’s description generally accurate? What unexpected details did AI pull from the image descriptions?

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- Could someone’s location, identity, or background information be inferred? What privacy concerns does this raise?

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- What should we consider before sharing images online with AI tools?

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Context Matters:

- Find an image of a food (any kind of food is fine).

- Upload the image to your preferred AI tool (that accepts images as input).
- Try these context-specific prompts:
 - **Prompt 1:** "I'm a food blogger. Help me write a caption for this image."
 - **Prompt 2:** "I'm a student. What study tips can you suggest based on this image?"
 - **Prompt 3:** "I'm planning a vacation. What recommendations do you have based on this image?"

→ Respond to the following questions prompts:

4. How did the AI's response change based on the prompt/context?

5. In 1-3 sentences, explain how AI “sees” and interprets images differently than humans do.

Part 2: The AI's Brain

Large Language Models (LLMs) like ChatGPT learn from data, recognize patterns, and refine responses through human feedback.

► Watch [How Chatbots and Large Language Models Work](#) [7:20 min]

Career Path Prompting Challenge:

You've seen how AI predictions get better when given more context. Now, you're going to test that idea by giving AI different types of prompts - starting with no example, then adding one, and finally, adding multiple examples. *Observe how the responses change at each level.*

DO THE FOLLOWING:

- Choose ONE career path that interests you from the options below (or suggest your own):

- Healthcare Professional (doctor, nurse, therapist)
- Creative Professional (writer, designer, artist)
- Technology Professional (software developer, data analyst, cybersecurity)
- Education Professional (teacher, counselor, administrator)
- Business Professional (marketing, finance, management)

Level 1: Basic Prompting

- Using your preferred AI tool, write a prompt that asks for general career advice about your chosen field.

Your Prompt:	
AI Response Summary:	

Level 2: Add a Single Example

- Refine your prompt by adding ONE specific example or piece of context about your situation.

Your Refined Prompt:	
AI Response Summary:	

Level 3: Provide Multiple Examples for Refinement

- Further refine your prompt with multiple examples, specific constraints, or detailed context.

Your Most Refined Prompt:	
AI Response Summary:	

- How did the AI's response improve with more structure/examples? Include at least one new thing the AI did when multiple examples for refinement were provided.

- Consider the key concepts from the video (including LLMs, Neural Networks, and Training Data). Connect what you observed from the levels of the career prompting exercise to the key concepts from the video.

Part 3: Smart or Just Predictable

AI is being integrated into many real-world tasks. Some people are excited about this, while others have concerns.

DO THE FOLLOWING:

- For each task below, think about how a human would do compared to AI. Rank each on the following categories:
 - **Speed:** 1 (extremely slow) - 5 (extremely fast)
 - **Accuracy:** 1 (extremely inaccurate) - 5 (extremely accurate)
 - **Creativity:** 1 (not at all creative) - 5 (extremely creative)
- Then explain whether or not you would recommend using AI for a similar task in the future.

Task 1: Solving a Math Problem

- **Test Prompt:** Solve this math problem and show your work: If a train travels 240 miles in 3 hours, and then travels 180 miles in 2 hours, what is its average speed for the entire trip?
- Solve it yourself first, then ask AI

	Speed (1 - 5)	Accuracy (1 - 5)	Creativity (1 - 5)	Is this a task you would recommend using AI for? Why or why not?
Human				

AI				
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Task 2: Providing Personal Advice

- **Test Prompt:** I'm feeling stressed about balancing school, work, and social life. What advice do you have for managing my time better?
→ Think about how you'd advise a friend, then ask AI

	Speed (1 - 5)	Accuracy (1 - 5)	Creativity (1 - 5)	Is this a task you would recommend using AI for? Why or why not?
Human				
AI				

Task 3: Fact-Checking Information

- **Test Prompt:** What are three major historical events that happened in the year 1995?
→ Research the answer yourself, then ask AI

	Speed (1 - 5)	Accuracy (1 - 5)	Creativity (1 - 5)	Is this a task you would recommend using AI for? Why or why not?
Human				
AI				

Part 4: AI's Wild Imagination

AI can have a wild imagination; sometimes this is helpful and sometimes it can be harmful. You'll read and analyze real-world case studies of AI hallucinations that had significant consequences.

DO THE FOLLOWING:

→ Choose one of the following case studies to analyze:

- Airline held liable for its chatbot giving passenger bad advice ([BBC, 2024](#))
- Lawyers submitted bogus case law created by ChatGPT. A Judge fined them \$5,000 ([AP, 2023](#))
- Cars can hallucinate, too – and it's a problem ([ZME Science, 2024](#))
- What to know about an AI transcription tool that “hallucinates” medical interactions ([PBS, 2025](#))

Chosen Case Study:	
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→ For your chosen case study, read the article carefully and complete the following analysis

Case Study Analysis:

Hallucination: What false information did the AI generate?	
Context: Where and how was this AI being used?	
Discovery: How was the hallucination detected?	
Impact: What were the consequences of this hallucination?	
Response: How did people respond to fix or prevent this problem?	
Reflect: What are 2 key takeaways that you learned from this article?	

Part 5: Debugging and Refining Outputs

- ▶ Watch the video on [AI's Hottest New Job Pays up to \\$250K a Year](#) [4:58 min]
- ▶ Watch the video on [5 Essential Elements of Effective AI Prompts](#) [6:12 min]

Five Key Elements of Effective Prompting:

1. **Task** - Specific and actionable instructions using clear and concise language
2. **Context** - Specific and relevant background details
3. **Format** - How the response should be structured (bullet points, numbered list, table, etc.) and style/tone of output (professional, casual, motivating, persuasive, etc.)
4. **Purpose** - Explain why you are asking and who the intended audience is
5. **Examples** - Additional examples or resources to use as a reference

DO THE FOLLOWING:

- Open your preferred AI tool in a new window.
- Use the five key elements of effective prompting to refine the following prompt:

Help me with my homework

- Complete the following table to address each element:

Task: What specific task did you add to the original prompt?	
Context: What context did you provide to improve the prompt?	
Format: What format did you request and why?	
Purpose: Why are you asking? Who is the audience?	

Examples: What example did you provide?	
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- How did your refinements improve the AI's response?

- Which elements had the biggest impact?

- What element could you refine further?