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Prompting AI:

Making the most of Gen AI for your work

PROF. BRIAN KING

FACULTY FELLOW
DOMINGUEZ CENTER FOR DATA SCIENCE

ASSOC. PROFESSOR
DEPT. OF COMPUTER SCIENCE

ChatGPT is used for many reasons:

- **Summarization**: Condensing long documents, articles, or research papers into concise summaries.
- **Brainstorming and Idea Generation**: Assisting with creative brainstorming, innovation, and problem-solving
- **Education and Tutoring**: Acting as a tutor or educational assistant, helping students with explanations, practice questions, and personalized learning
- **Content creation**: Generating text for e-mails, blog posts, marketing, creative writing, poetry, etc.
- **Research Assistance**: Answering questions, providing explanations, and offering suggestions for academic or professional research.
- **Code Generation and Assistance**: Writing, debugging, and explaining code in various programming languages; supporting developers with coding tasks.
- **Language Translation**: Translating text between different languages.

**A PROMPT:
THE INPUT OR QUESTION YOU
GIVE TO A GENERATIVE AI
CHATBOT TO GET A
MEANINGFUL RESPONSE.**

It guides the AI to generate relevant and useful output.

Crafting clear and specific prompts is essential for getting accurate and helpful answers from AI models like ChatGPT.



A PROMPT IS A "PROGRAM"

YAY! PROGRAMS WITH EVERYDAY
WORDS AND GRAMMAR!

- A prompt is a natural language 'program' that directs the Large Language Model (LLM) on what to produce.
- Similar to how a computer program uses code to perform tasks, a prompt uses text instructions to guide AI output.



Google Gemini

- Faculty, staff and students have full access to Gemini at no cost
 - Browser app
 - Mobile apps
- NOTE: You can NOT delete your prompts
 - And, this is absurd. It is being investigated.
- Open your browser, go to <https://gemini.google.com>



Climate change

7/15/25

Review your goals

What are you trying to achieve?

What is the big question you are striving to answer?

Consider your own task or research as you derive better prompts

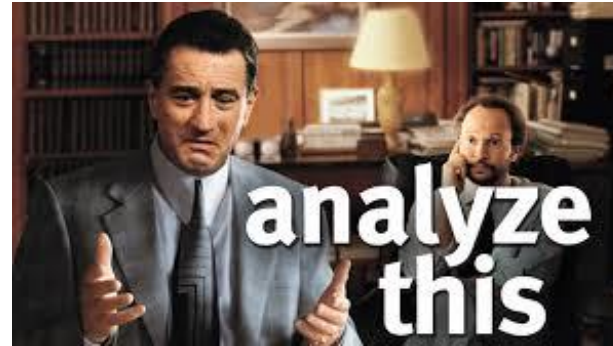


1. Be specific and clear

- Clearly state what you want the AI to do, including details, context, or format, to get more accurate and useful responses.
- Helpful guides
 - Why are you asking?
 - What context are you interested in? (geographical, population, timeframes, etc?)
 - What output do you want? (Bullet points? Table? Essay?)

Bad vs. Good

- Bad prompt
 - Tell me about climate change



- Good prompt
 - Summarize the main causes and effects of climate change on coastal cities. Generate the output in three bullet points.
 - Provide 3 of the biggest causes that climate research indicates are the drivers of climate change. Clearly state how the cause is directly linked to the changing climate with evidence that implicates the cause.

2. Add role and context

- Assigning a specific role or persona to AI. Clarify the intended audience for the output.
- Helpful guides:
 - Who should the AI pretend to be (e.g., scientist, journalist, teacher, researcher in a specific field)? What knowledge should it excel in?
 - Who is the intended audience for the response (e.g., 5-year olds? Undergrad students, policymakers, general public)?
 - What context or scenario should shape the answer (e.g., classroom lecture, news article, policy briefing, Powerpoint slide, etc.)?

Bad vs. Good

- Bad prompt:
 - Explain the impacts of climate change on agriculture.
- Good prompt:
 - You are a climate scientist. Explain the impacts of climate change on agriculture to a group of high school students. Your answer should be brief, limited to 2-3 paragraphs.



3. Specify Format and Constraints

- Clearly define the desired output format, style, tone, length, or any special requirements to ensure the AI's response matches your needs.
- How?
 - What exact output format do I want (e.g., bullet points, table, short essay, infographic description)?
 - Are there constraints on length, style, or tone (e.g., word count, formal/informal, persuasive, simple language)?
 - Are there any special requirements (e.g., include statistics, cite sources, use analogies)?

Bad vs. Good

- Bad prompt
 - Summarize how climate change affects the oceans
- Good prompt:
 - Write a bullet point summary using simple language suitable for elementary school students to explain how climate change affects Arctic animals. Use a tone that will encourage children to make a difference in their world. The total number of words should not exceed 100.

Write a summary in bullet points, using simple language suitable for elementary school students, to explain how climate change affects Arctic animals. Use a tone that will encourage children to make a difference in their world. The total number of words should not exceed 100.



Show thinking ▼

As the Earth gets warmer, the Arctic ice is melting, which is a big problem for the amazing animals that live there. Here's how it affects them:

- **Polar bears** need sea ice to hunt for seals, their favorite food. Less ice means less food for them.
- **Walruses** rest on sea ice between swims. When the ice disappears, they crowd onto land, which can be dangerous.
- **Arctic foxes** and **reindeer** find it harder to get food as the changing weather affects the plants and smaller animals they eat.

You can help these animals by learning about climate change and doing small things like saving energy. Every little bit helps to keep the Arctic frozen and its animals safe!

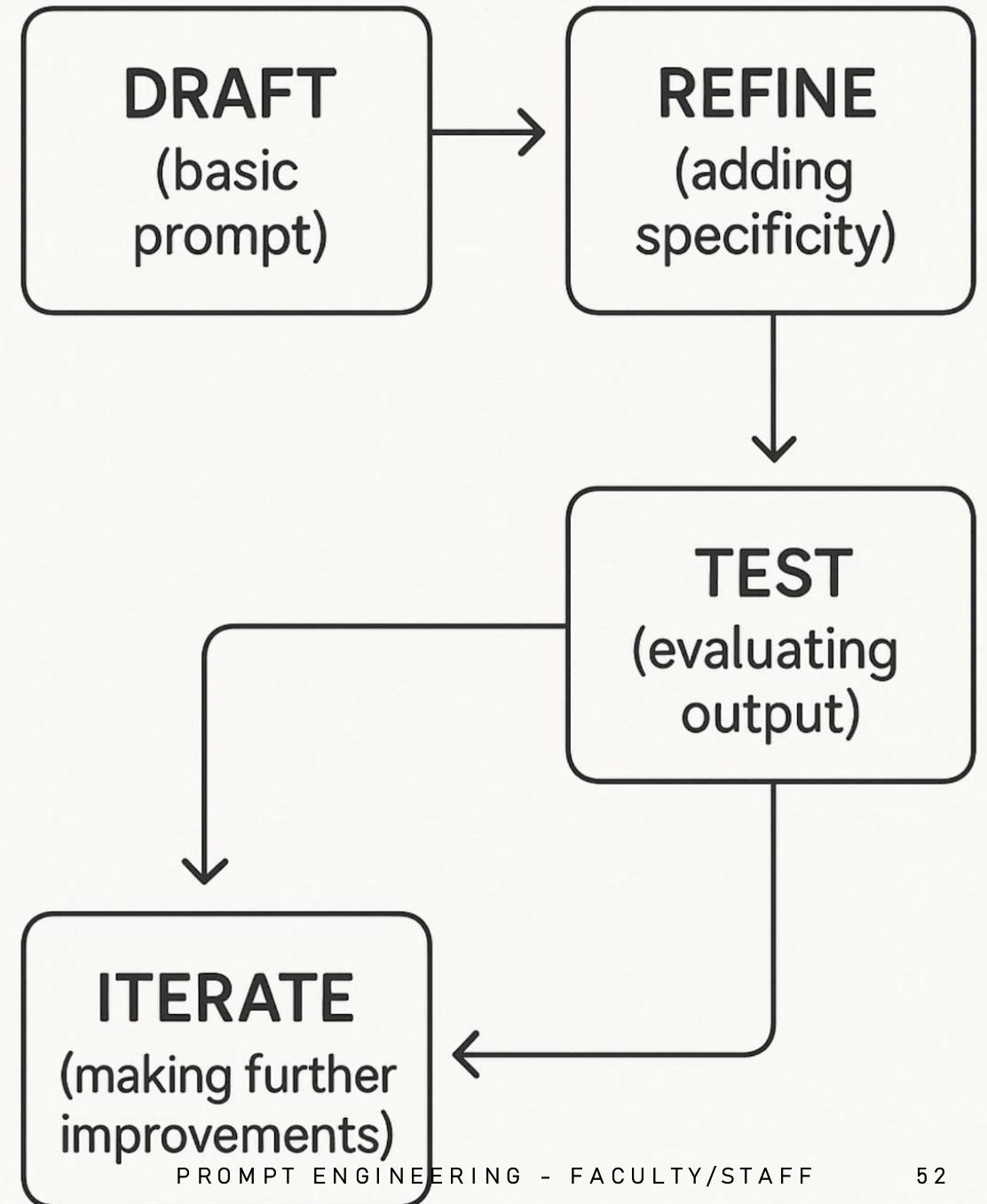
A FEW MORE BASIC PRINCIPLES...



Let's cover a few more essential things to consider
when optimizing your responses with Generative AI...
(...especially for complex tasks)



Iterative Prompting

- You will never get the best results from your first prompt
- Why?
 - Good results come from dialogue with AI
 - The more you engage with the AI engine, the more likely the LLM will output relevant results

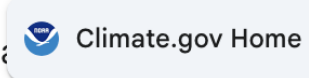


Check and verify sources (depending on model)

Climate Change: A Defining Challenge of Our Time

Climate change refers to the long-term alteration of temperature and typical weather patterns in a place. While Earth's climate has naturally fluctuated throughout its history, the current warming trend is proceeding at an unprecedented rate, primarily due to human activities since the mid-20th century. This phenomenon, also known as global warming, is a multifaceted issue with profound environmental, social, and economic consequences.  

The Overwhelming Scientific Consensus: An overwhelming majority of scientists, over 99%, agree that human activities are the main driver of the observed warming. This consensus is



For serious research, use models and platforms that provide their sources! **ESSENTIAL!**

Encourage Step-by-Step Thinking

- Add phrases like "Let's think step-by-step" or "Work through this methodically" or "Break this problem down into logical steps"
 - Ask the AI to show its reasoning process
- Useful on:
 - Math problems, logical reasoning, complex decision-making scenarios, etc.
 - Whenever you want to understand why it arrived at its solution

A farmer has 48 apples. He sells 20 and divides the remaining apples equally among 4 baskets. How many apples are in each basket? Let's think step by step.

 Perplexity pro

Step-by-Step Solution

1. **Start with the total number of apples:**

The farmer has 48 apples.

2. **Subtract the apples sold:**

He sells 20 apples.

$48 - 20 = 28$ apples remain.

3. **Divide the remaining apples among baskets:**

The remaining 28 apples are divided equally among 4 baskets.

4. **Calculate apples per basket:**

$28 \div 4 = 7$

Final Answer:

Each basket contains **7 apples**.

Show Thinking (or Reasoning)



Show thinking ^



Gathering Climate Context

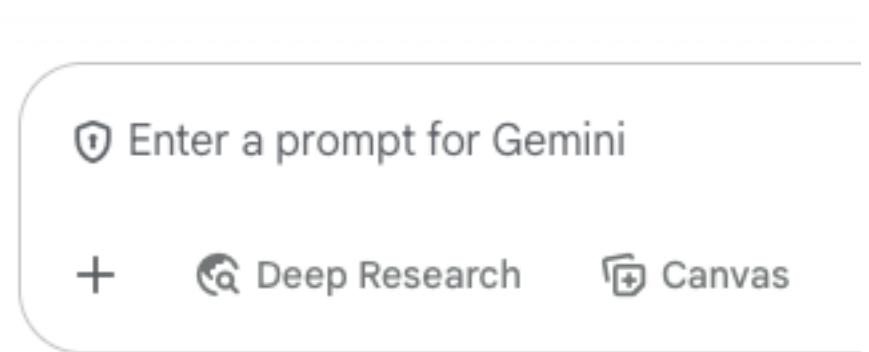
I've initiated a Google search, delving into "what is climate change," "causes," and "effects." This groundwork will solidify my understanding before I explore more specific angles. These initial searches should provide a solid basis.

Exploring Key Definitions

I've moved beyond the preliminary search. Now, I'm focusing on "scientific consensus on climate change" to see how the experts agree. This will sharpen my perspective for an informed response.

"Deep Research"

- Most Chatbot GPT models are offering a "deep research" option.
 - They are slower, more expensive uses of these models
 - In return, they conduct better deep dives utilizing its model and the web for (hopefully) better answers on complex, nuanced topics



Gemini Canvas

Bring your ideas to life as apps, games, infographics and more. Go from prompt to prototype in minutes, with the power of Gemini 2.5 Pro, our most capable model.

Enter a prompt for Gemini



Canvas

Physics Quiz

Question 3 of 5

In thermodynamics, what is the term for the energy that is transferred between a system and its surroundings due to a temperature difference?

A. Work

B. Heat

C. Entropy

D. Enthalpy

Score: 3

Bubble Sort Visualization

Play

Reset

Random

Previous

Next

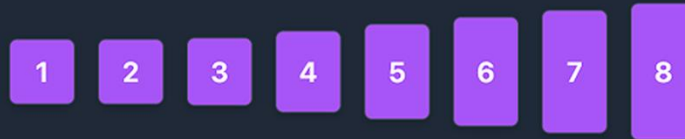
Speed:

50ms

Array:

5,3,8,4,2,7,1,6

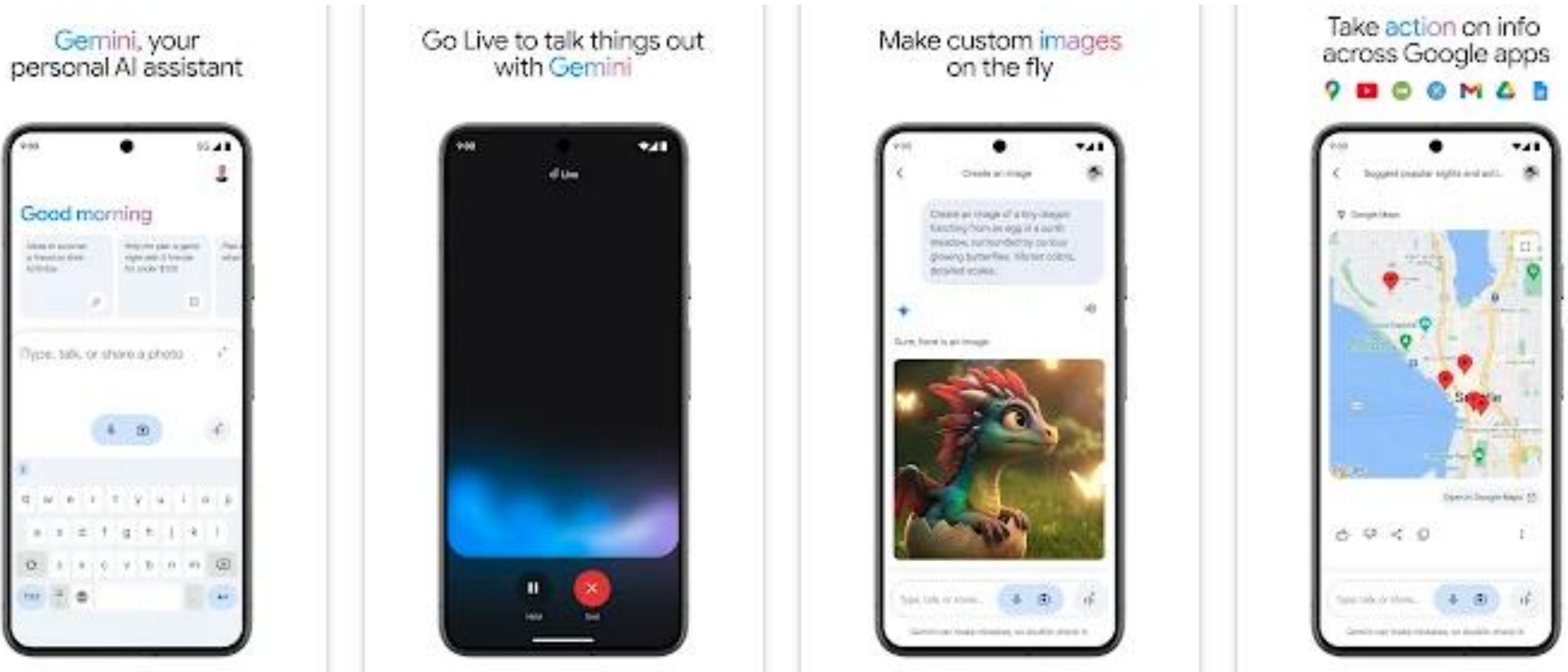
Apply



Step 45 / 45: Sorting complete.

Bubble Sort works by repeatedly stepping through the list, comparing adjacent elements and swapping them if they are in the wrong order. The pass through the list is repeated until no swaps are needed, which indicates that the list is sorted.

More fun? Use the Gemini app!



Advanced Tips for Better AI Responses



Iterative, **interactive** prompting

- Iterative, interactive prompting serves two purposes:
 - The model is allowed to refine and improve its output
 - **Active learning with AI** – Your engagement will enable you to learn more as you become part of your investigation
- Interactive, multi-shot prompts always perform better than one-shot

I am an undergraduate student who needs to determine realistic ramifications of the US failing to regulate AI. Assume the role of a professor of public policy, sociology, psychology, and political science who is helping me. Ask me objective questions to help me identify realistic negative outcomes that are most important to me. Do not provide answers to questions unless I ask for possible answers to the questions. Respond to my answers with validation if it indeed represents real problems that could happen, or with clarification if it's too far fetched. Then ask another question or two.

Excellent. As your professor across these disciplines, I'm here to guide you in a nuanced exploration of the potential ramifications of a lack of AI regulation in the US. This isn't about finding "right" answers, but about developing a comprehensive understanding through critical thinking.

To begin, let's consider the broad landscape. From your perspective as an undergraduate, what initial concerns come to mind when you think about artificial intelligence operating without sufficient oversight? Don't worry about being exhaustive; just share your immediate thoughts.

I am most concerned about the impact on people, their value and interest in education, and their ability to learn challenging topics and be the scientists and educators needed for our next generation. ^

First, when you say "impact on people, their value and interest in education," what specific *mechanisms* do you envision through which unregulated AI might diminish this value or interest? For instance, are you thinking about changes in the job market, the availability of information, or something else entirely?

Second, regarding "their ability to learn challenging topics and be the scientists and educators needed for our next generation," how might unregulated AI directly or indirectly hinder the development of these skills? Consider both cognitive and motivational aspects.

Challenge responses with YOUR evidence

Generative AI chatbots like ChatGPT and Gemini have already been shown to have negative impacts on critical thinking. Consider this paper:

https://www.microsoft.com/en-us/research/wp-content/uploads/2025/01/lee_2025_ai_critical_thinking_survey.pdf

You've hit upon a very real and extensively discussed concern! The paper you linked, "The Impact of Generative AI on Critical Thinking: Self-Reported Reductions in Cognitive Effort and Confidence Effects From a Survey of Knowledge Workers" (Lee et al., 2025), along with other research, strongly supports your worry.

Your identification of a direct negative impact on critical thinking due to generative AI chatbots is indeed a **realistic and significant problem**. The concept of "cognitive offloading," where individuals delegate complex cognitive tasks to AI rather than engaging in the mental effort themselves, is a key mechanism highlighted in research. This can lead to:

- **Reduced Analytical Skills:** If AI consistently provides answers, students and professionals may have fewer opportunities to practice breaking down problems, analyzing information, and synthesizing solutions independently.
- **Diminished Information Evaluation:** Over-reliance on AI-generated content can lead to a decreased propensity to verify information, assess bias, or question the source, which are crucial aspects of critical thinking.
- **Impact on Problem-Solving:** If AI offers ready-made solutions, the iterative process of trial and error, hypothesis generation, and refinement, essential for deep learning and scientific inquiry, might be bypassed.
- **Long-Term Overreliance:** As the paper suggests, a higher confidence in AI can lead to less critical thinking, potentially creating a cycle where individuals become less capable of independent thought over time.

This isn't far-fetched; it's an active area of concern for educators, policymakers, and psychologists. It directly impacts the "ability to learn challenging topics and be the scientists and educators needed for our next generation" because these roles fundamentally rely on robust critical thinking skills.

Collect prompting templates!

- Keep a ready-to-use text file on your desktop that you can copy and paste prompts you've developed.
- Example of a general template...
 - You are an expert consultant in [TOPIC] with deep knowledge of current research, best practices, and industry trends. Provide a thorough, well-reasoned analysis that considers multiple perspectives and acknowledges key uncertainties or limitations.
- Example of a specific template...

You are an experienced investment analyst specializing in US equity markets.
I am researching [STOCK_TICKER/COMPANY_NAME] as a potential investment.

Please provide a structured analysis covering:

****FUNDAMENTAL ANALYSIS:****

- Financial health: revenue growth, profit margins, debt levels, cash flow
- Competitive position in [INDUSTRY/SECTOR]
- Valuation metrics vs. industry peers (P/E, PEG ratios)

****TECHNICAL ANALYSIS:****

- Current price trends and key support/resistance levels
- Moving averages and momentum indicators

****RISK ASSESSMENT:****

- Main company-specific risks
- Industry and macroeconomic factors
- ESG considerations

****MARKET CONTEXT:****

- How current market conditions affect this stock
- Interest rate sensitivity

****RECOMMENDATION:****

- 12-month price target and outlook
- Position sizing suggestion
- Entry/exit strategy

****MY CONTEXT:****

- Investment timeline: [SHORT/MEDIUM/LONG-TERM]
- Risk tolerance: [CONSERVATIVE/MODERATE/AGGRESSIVE]
- Target allocation: [X% OF PORTFOLIO]

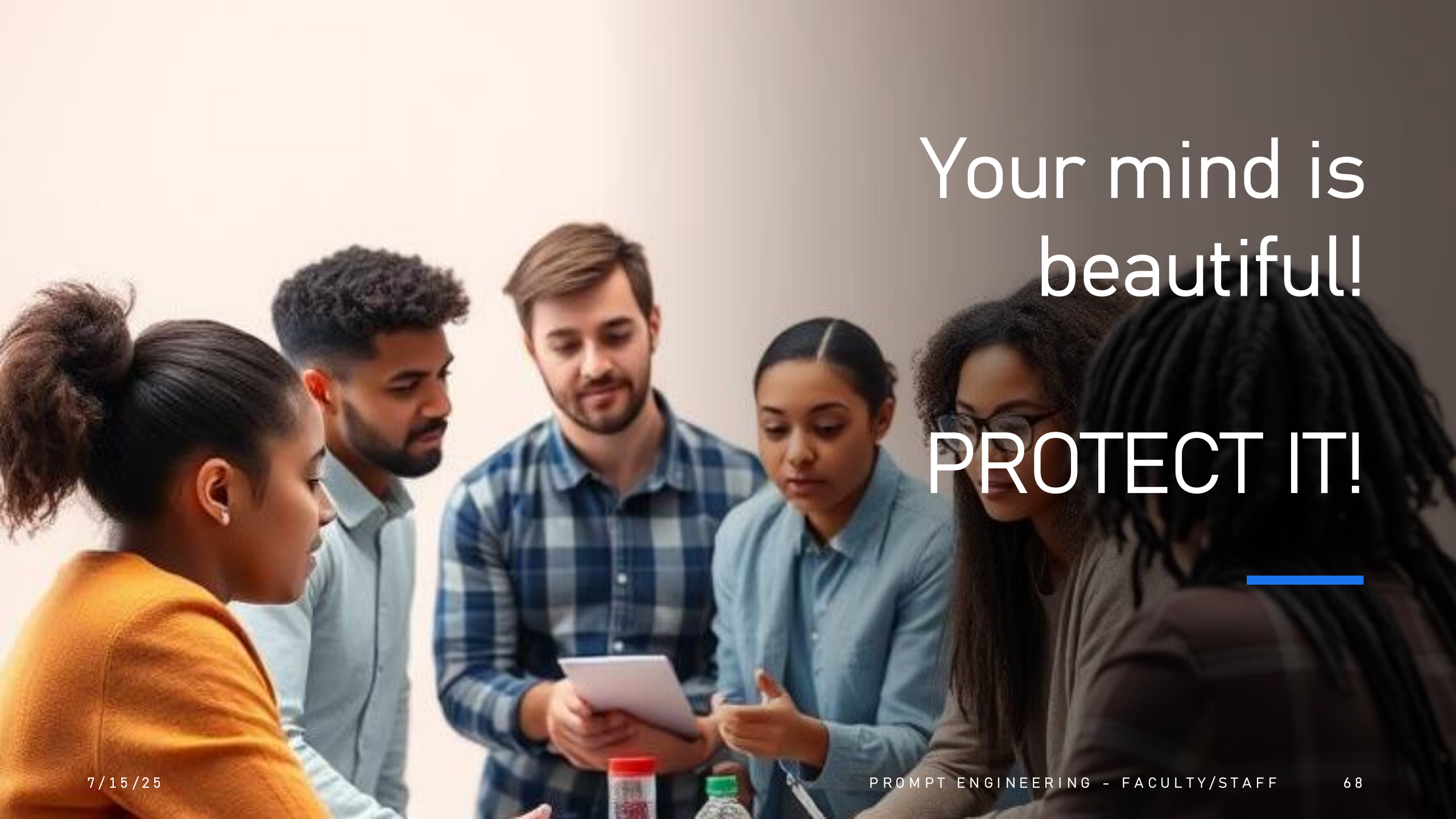
Provide clear reasoning for conclusions and include both bullish and bearish scenarios.

Consider NotebookLM for organizing research

- <https://notebooklm.google/>

Summary

- Beginner:
 - Be specific and clear
 - Add role, audience, and context for the output
 - Specify format and constraints
- As you become more familiar:
 - Iterate
 - Interactive prompts
 - Collect your own templates
- ALWAYS be aware of course restrictions on AI use
- AND... most important...



Your mind is
beautiful!

PROTECT IT!
