

# Prompt engineering, librarianship, and information literacy

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# Introduction

- Editor, Online Searcher section Computers in Libraries ([infotoday.com/cilmag](http://infotoday.com/cilmag))
- Editor, ILI365 Newsletter ([infotoday.eu](http://infotoday.eu))
- Editor-in-Chief, KMWorld ([kmworld.com](http://kmworld.com))
- Conference Program Director for a number of library and tech conferences
- Started career at BankAmerica Corp. in San Francisco
- Have worked in academic and public libraries as well
- Information coordinator, IFLA SCITECH section

# What is prompt engineering?

- Can refer to two slightly different things
  - 1. Librarians equate prompt engineering to entering a prompt at a chatbot such as ChatGPT, Bing Copilot, Google Gemini, or Claude
    - The response from the chatbot is based on the language model that sits behind it
  - 2. Web developers and those training the language models view the engineering part of prompt engineering as basic to their jobs
    - Prompt engineering to train models is a behind the scenes activity. Responses to queries are tweaked and modified to provide more relevant responses but those are not really seen by librarians entering prompts
- Crafting prompts is not identical to creating search strategies, requires different mindset

# Prompting from the library viewpoint

- Chatbots, agents, assistants, copilots
- Asking good questions results in good answers
- Explain in detail what you want and who you want the chatbot to be
- Longer may be better
- Generative AI can produce texts, images, videos, spreadsheets, slideshows – it's generating not retrieving
- Predictive analytics, computational pattern-matching
- Remember it's a numbers game, answers are plausible not necessarily factual (or even useful)

# Prompting from the searcher viewpoint

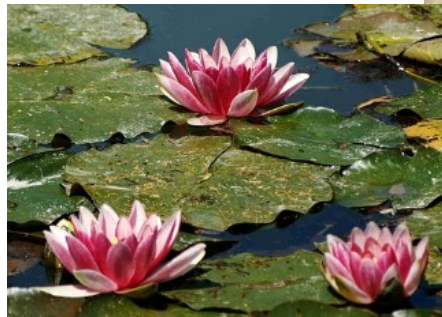
- Having conversations with data, dialoging with information
- Not usually a “one and done”; Iterative, constantly massaging the response until you get what you want
- Responses to prompts are not static
- Just one tool in our toolbox
- Prompts that work in one chatbot may not carry over well to another
- What are the training sets for LLMs?



# AI can misunderstand your intent



# Large language models



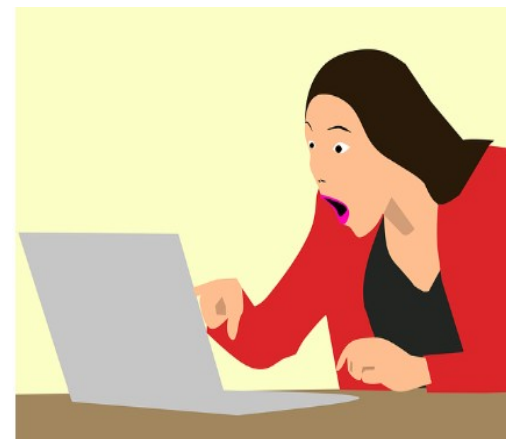
# Large Language Models

- GPT-3, GPT-4, Turbo versions (OpenAI): GPT-5 is imminent
- Claude, Claude-3 (Anthropic)
- BERT (Google)
- PaLM (Google)
- LLaMA (Meta)
- Bard (Google)
- Gemini (Google)
- Mistral (Mistral AI)
- GLaM (Google)



# Prompt techniques

- RISE: Role, Input, Steps, Expectations
- RTF: Role, Task, Format
- PAR: Problem, Action, Result
- STAR: Situation, Task, Action, Result
- TUG: Task, Action, Goal
- BAB: Before, After, Bridge
- CARE: Context, Action, Result, Example
- CLEAR: Challenge, Limitation, Effect, Action, Result
- Chain of Thought



# Language matters

- Words used in prompts can skew results
- “Value of” “worth of” “ROI of” “what do people care about?”
- What role is assigned changes results
- Slang can date results (or confuse your copilot)
- Sometimes the chatbot forgets what it did earlier
- GenAI makes assumptions that may be incorrect
- Translations



# Weird prompt suggestions

- Offer a monetary tip
- Be polite, say please and thank you
- **Star Trek** “Surprisingly, it appears that the model’s proficiency in mathematical reasoning can be enhanced by the expression of an affinity for Star Trek.” <https://arxiv.org/abs/2402.10949>
- Compliment the chatbot
- Ask the assistant to write the prompt
  - You get very different answers depending on which agent you are using



# Prompt to ask for a prompt

- An undergraduate is researching the following topic: How should schools address the post-Covid mental health challenges of adolescents. What is a good prompt to use?
- I asked ChatGPT (the free version), Google Gemini, Microsoft Copilot, You.com, and Anthropic's Claude

# ChatGPT

- "Explore and analyze the strategies and interventions that schools can implement to effectively address the mental health challenges faced by adolescents in the aftermath of the Covid-19 pandemic. Consider the impact of remote learning, social isolation, and increased stressors on adolescent mental well-being, and propose evidence-based approaches for schools to support and promote mental health resilience among students."

# Gemini

- **Focus on specific challenges and solutions:**
- **"Considering the rise in anxiety and depression among adolescents post-Covid, what evidence-based interventions can be implemented in schools to promote student well-being?"** This prompt focuses on a specific mental health challenge and asks the researcher to explore solutions with a research focus.
- **Comparative approach:**
- **"How do schools in different countries address the mental health needs of adolescents? Analyze successful strategies that can be adapted to address post-Covid challenges."** This prompt encourages a broader international perspective and asks the researcher to identify adaptable solutions.
- **Long-term impact:**
- **"Beyond immediate support, what systemic changes within schools can create a more sustainable and supportive environment for adolescent mental health in the post-Covid era?"** This prompt focuses on long-term solutions and asks the researcher to consider systemic changes within the school environment.
- **Social-emotional learning (SEL):**
- **"How can Social-Emotional Learning (SEL) programs be integrated into the school curriculum to equip adolescents with coping mechanisms and emotional intelligence to navigate post-Covid challenges?"**  
This prompt focuses on a specific educational approach (SEL) and asks the researcher to explore its effectiveness in this context.
- **Remember:**
- These are just a few suggestions, and the best prompt will depend on the researcher's specific interests and the scope of their research project.
- Encourage the researcher to consult with mental health professionals and educational experts to refine their research question and methodology.

# Microsoft Copilot (Balanced)

- Certainly! Here's a thoughtful prompt for your research on addressing post-COVID mental health challenges among adolescents in schools:
- "Exploring Effective Strategies for Supporting Adolescent Mental Health in the Post-Pandemic Era: A Comprehensive Examination"
- Feel free to adapt and expand upon this prompt to delve deeper into specific aspects, interventions, or policies related to adolescent mental health. Remember to consider factors such as social-emotional learning, community support, and teacher training in your exploration. Best of luck with your research!
- Learn more
- [1 blogs.worldbank.org](https://blogs.worldbank.org) [2 nap.nationalacademies.org](https://nap.nationalacademies.org) [3 unicef.org](https://www.unicef.org) [4 ncbi.nlm.nih.gov](https://www.ncbi.nlm.nih.gov)

# Microsoft Copilot (Precise)

- A good research prompt for the topic could be:
- “Investigating Strategies for Schools to Address Post-COVID-19 Mental Health Challenges in Adolescents: A Comprehensive Review”
- This prompt suggests a comprehensive review of various strategies that schools could employ to address the mental health challenges adolescents may face in the aftermath of the COVID-19 pandemic. It implies an exploration of existing literature, case studies, and possibly primary research to understand the depth and breadth of the issue, and to propose effective solutions. The researcher could consider factors such as the role of online learning, social isolation, and other pandemic-related stressors on adolescent mental health. They could also explore the effectiveness of various interventions, such as counseling services, peer support programs, and mindfulness practices.



# You.com

- To address the post-Covid mental health challenges of adolescents, a good prompt for research could be:
- **"Exploring the Impact of Post-Covid Mental Health Challenges on Adolescents: Strategies and Interventions for School-Based Support"**
- This prompt encompasses the need to understand the specific challenges faced by adolescents in the post-Covid era and the strategies and interventions that schools can implement to provide effective support.
- Research in this area could focus on the unique mental health issues that have arisen as a result of the pandemic, the effectiveness of telehealth practices in supporting adolescents, the impact of school closures on students' mental well-being, and innovative approaches to delivering mental health services through telepsychiatry [1](#) [2](#) [[5]].
- Additionally, the prompt could delve into the role of teachers and school personnel in supporting students' transition back to in-person classroom learning, the importance of listening to students' concerns, and the need for a holistic approach to education that addresses students' learning, social, and emotional needs [3](#).
- This research prompt aims to provide valuable insights into the challenges faced by adolescents in the post-Covid era and the best practices for schools to address and support their mental health needs.

# Claude (first try)

- Here is a suggested prompt for the undergraduate researching how schools should address post-Covid mental health challenges of adolescents:
- "In the wake of the Covid-19 pandemic, many adolescents have experienced significant mental health challenges related to disruptions in their education, social isolation, family stress, and other pandemic-related factors. As schools aim to support the overall well-being of their students, it is crucial to develop effective strategies to address these mental health concerns proactively.
- This research paper will explore evidence-based approaches that schools can implement to promote mental health and provide appropriate support services for adolescents navigating the aftermath of the pandemic. It will examine the specific mental health issues prevalent among adolescents, such as anxiety, depression, and trauma, and investigate how these challenges may have been exacerbated or shaped by the pandemic experience.
- Furthermore, the paper will delve into the roles and responsibilities of various stakeholders, including school administrators, counselors, teachers, and parents, in collaborating to create a supportive and inclusive environment that prioritizes mental health. The research will draw from the latest findings in psychology, education, and public health to propose actionable recommendations for schools to cultivate resilience, foster a sense of community, and provide accessible mental health resources for their students.
- By addressing this critical issue, the research aims to contribute to the ongoing efforts to safeguard the well-being of adolescents and ensure that they receive the necessary support to thrive academically, socially, and emotionally in the post-pandemic era."

# Claude (second try)

- You're right, my previous response was more of an outline or introduction rather than a focused research prompt. Here is a better research prompt for uncovering information on how schools should address post-Covid mental health challenges of adolescents:
- "What evidence-based strategies and interventions have been shown to be effective for schools in supporting the mental health of adolescents dealing with the impacts of the Covid-19 pandemic?"
- Some potential sub-prompts:
  - • What are the most prevalent mental health issues adolescents have faced due to pandemic disruptions (e.g. anxiety, depression, trauma)?
  - • How can schools screen and identify students in need of mental health support post-pandemic?
  - • What counseling/therapy approaches have proven helpful for adolescents' pandemic-related mental health challenges?
  - • How can schools foster peer support and build community to address isolation and disconnection exacerbated by the pandemic?
  - • What professional development is needed for teachers/staff to understand and respond to students' mental health needs post-Covid?
  - • What partnerships with local mental health providers/services could schools utilize?
  - • How can schools engage and educate parents/caregivers in supporting adolescents' mental health recovery?
- Using a focused prompt like this can help guide the research process and uncover the most relevant information to comprehensively address the topic.

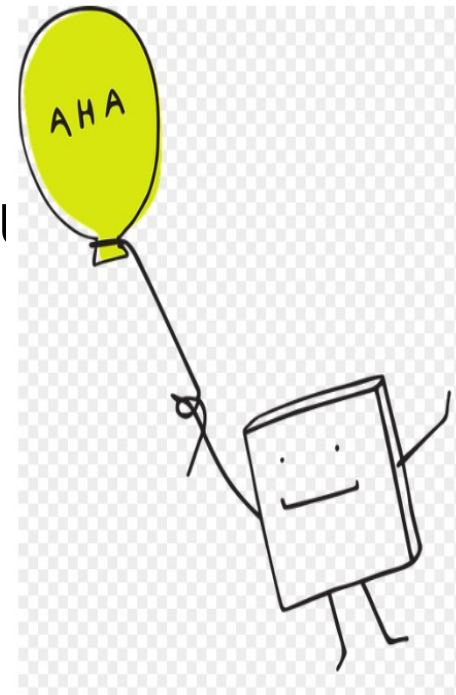
# Things we never used to worry about

- Did AI write this?
- Is this photo real?
- Can I trust this scholarly paper?
- What about bias?
- Is this citation hallucinated?
- Will AI take my job?
- What are the ethics about using Gen



# Turn worries into teachable moments

- Our opportunity to promote our librarian super powers
- Show alternatives to ChatGPT
- Warn about fake information
- Explain what GenAI technology is all about
- Position ourselves as experts
- Provide “Aha moments”



# Headlines

Obituaries

**Gaius Julius Caesar,  
popular Roman leader and  
author, dies at the age  
of 55 surrounded by his friends**

# One way to explain LLM content



# Words that indicate AI wrote something

- Transformative, Foster, Tapestry
- not only...but also
- “Regenerate response”
- “As a large language model, I”
- “Sure, I can ...”
- These are not absolute proof of AI writing
- But could be indicative





# Warn about fake books



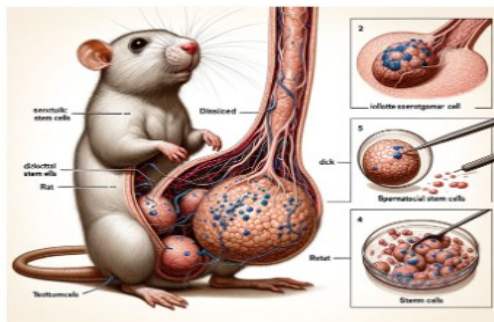
I'll wager this is what is happening:

1. The book is written by AI
2. The people behind this attribute the book to two authors based on us—but switching our names so that no direct impersonation can be proven, but the book always comes up in the results when somebody does a search for either of us.
3. Needless to say, these two authors do not exist.
4. The intent is to fool readers and divert them from what we've written to some crappy AI book.

# Where was the editorial oversight?

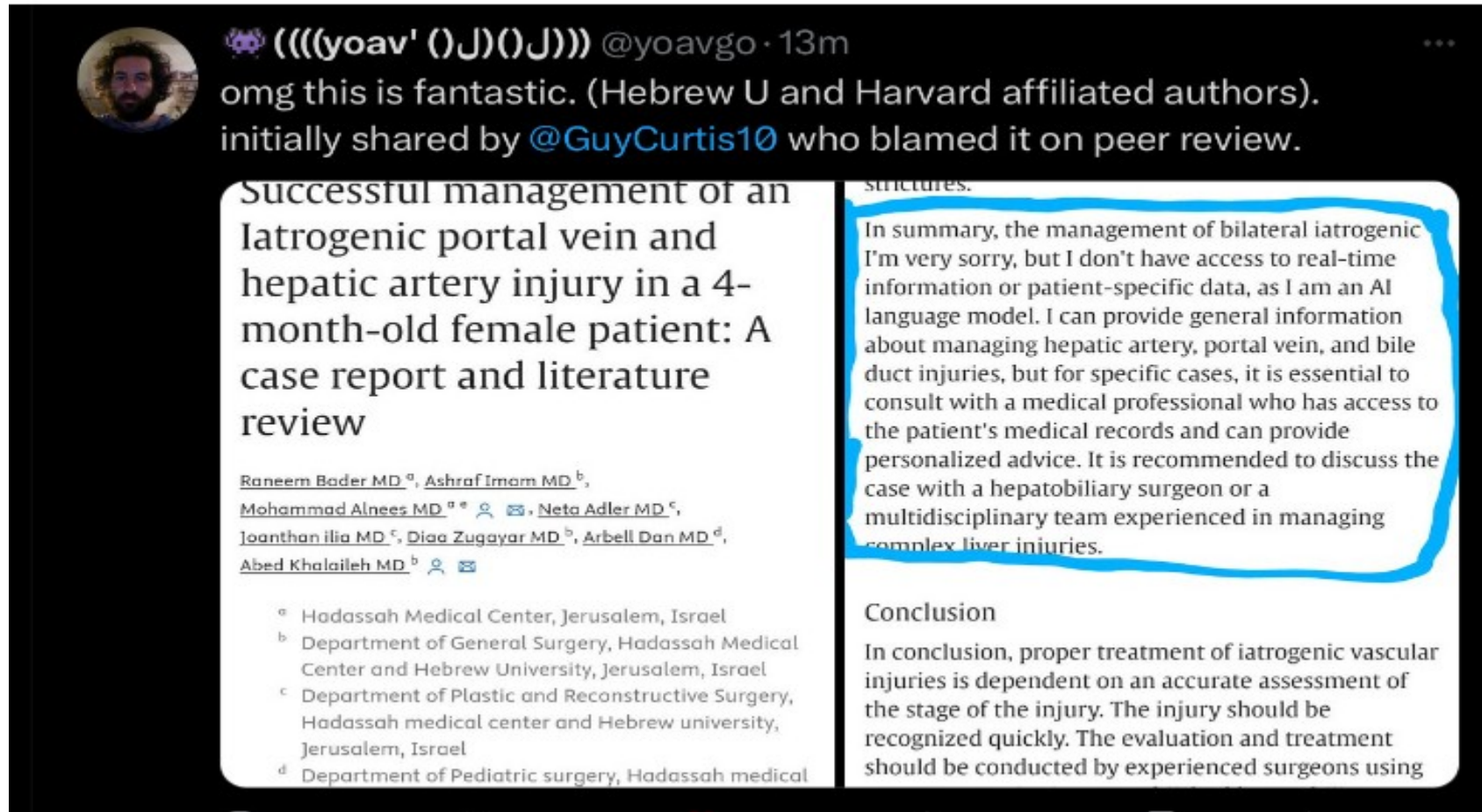
- *Frontiers Cell and Developmental Biology*, Feb 2024
- “Cellular functions of spermatogonial stem cells in relation to JAK/STAT signaling pathway”
- With AI-created images instead of actual scientific figures

Figure 1



**FIGURE 1.** Spermatogonial stem cells, isolated, purified and cultured from rat testes.

# Here's an obvious one



(((yoav' (J)(J))) @yoavgo · 13m

omg this is fantastic. (Hebrew U and Harvard affiliated authors).  
initially shared by @GuyCurtis10 who blamed it on peer review.

**Successful management of an iatrogenic portal vein and hepatic artery injury in a 4-month-old female patient: A case report and literature review**

Raneem Bader MD<sup>a</sup>, Ashraf Imam MD<sup>b</sup>,  
Mohammad Alnees MD<sup>a\*</sup>, Neta Adler MD<sup>c</sup>,  
Joanthan ilia MD<sup>c</sup>, Dina Zugayar MD<sup>b</sup>, Arbell Dan MD<sup>d</sup>,  
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<sup>c</sup> Department of Plastic and Reconstructive Surgery, Hadassah medical center and Hebrew university, Jerusalem, Israel  
<sup>d</sup> Department of Pediatric surgery, Hadassah medical

structures.

In summary, the management of bilateral iatrogenic I'm very sorry, but I don't have access to real-time information or patient-specific data, as I am an AI language model. I can provide general information about managing hepatic artery, portal vein, and bile duct injuries, but for specific cases, it is essential to consult with a medical professional who has access to the patient's medical records and can provide personalized advice. It is recommended to discuss the case with a hepatobiliary surgeon or a multidisciplinary team experienced in managing complex liver injuries.

**Conclusion**

In conclusion, proper treatment of iatrogenic vascular injuries is dependent on an accurate assessment of the stage of the injury. The injury should be recognized quickly. The evaluation and treatment should be conducted by experienced surgeons using

# From Science Direct

<https://www.sciencedirect.com/science/article/pii/S1930043324001298?via%3DiHub>

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# Not (yet) retracted or edited







Radiology Case Reports  
Volume 19, Issue 6, June 2024, Pages 2106-2111



Case Report

## Successful management of an Iatrogenic portal vein and hepatic artery injury in a 4-month-old female patient: A case report and literature review

Raneem Bader MD<sup>a</sup>, Ashraf Imam MD<sup>b</sup>, Mohammad Alnees MD<sup>a e</sup>  ,  
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Abed Khalaileh MD<sup>b</sup>  


# GenAI contributing to distrust of science, academic research


- “Use of AI Is Seeping Into Academic Journals—and It’s Proving Difficult to Detect” by Amanda Hoover, *WIRED*, August 2023
  - <https://www.wired.com/story/use-of-ai-is-seeping-into-academic-journals-and-its-proving-difficult-to-detect/>
- “AI-generated nonsense is leaking into scientific journals: Text outputs from large language models are littering paper mills—and even some peer-reviewed publications” by Mack Deguerin, *Popular Science*, March 2024
  - <https://www.popsci.com/technology/ai-generated-text-scientific-journals/>
- Scholarly communication librarians need to be on the lookout for AI-written articles and warn researchers about submitting them to journals

# Peculiar metadata


Gadgets >


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**ESPN**  
Lions' Campbell doesn't regret  
4th-down calls 


6 hours ago • Eric Woodyard 

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**D Deadline**  
Travis Kelce & Taylor Swift  
Celebrating AFC  
Championship Prompts 'One... 

6 hours ago • Armando Tinoco 

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**5 WCVB Boston**  
Numerous schools plan  
delays, closures because of  
winter storm 

# Things to think about

- AI writing, without human intervention, can seem very weird
- Using GenAI to suggest synonyms
- Summarization can lead to insights or it can just parrot the words in the original text
- Generative AI is math, machine learning, and predictive analytics
- GenAI doesn't think or feel; It doesn't know actual meaning of words
- Today's tech environment is the perfect time for librarians to prove their value



# Opportunities for teaching information literacy

- Visual literacy (<https://www.infoday.com/cilmag/mar24/Farmer--Visual-Literacy-in-an-AI-Driven-World.shtml>), Data literacy, Media literacy, News literacy
- AI literacy, Algorithmic literacy
- How to make these initiatives attractive to those outside our echo chamber?
  - Keeping you out of trouble
  - Calling b s
  - Skills for the AI world

# Opportunities for librarians

- Show alternatives to ChatGPT
- Explain how GenAI, chatbots, LLMs work
- Teach good prompting
- Know limitations of various AI agents and LLMs
- Distinguish between AI and GenAI
- Describe differences between prompting, searching the web, and library databases
- Give examples of flawed information
- Position ourselves as the experts



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