

# A.I in Research

# WHAT IS AI?

AI is the simulation of human intelligence processes by computer systems.

These processes include:

- Learning (the acquisition of information and rules for using the information)
- Reasoning (using the rules to reach approximate or definite conclusions)
- Self-correction.

The goal of AI is to create systems that can function intelligently and independently.

# DEFINING AN A.I LANGUAGE MODEL

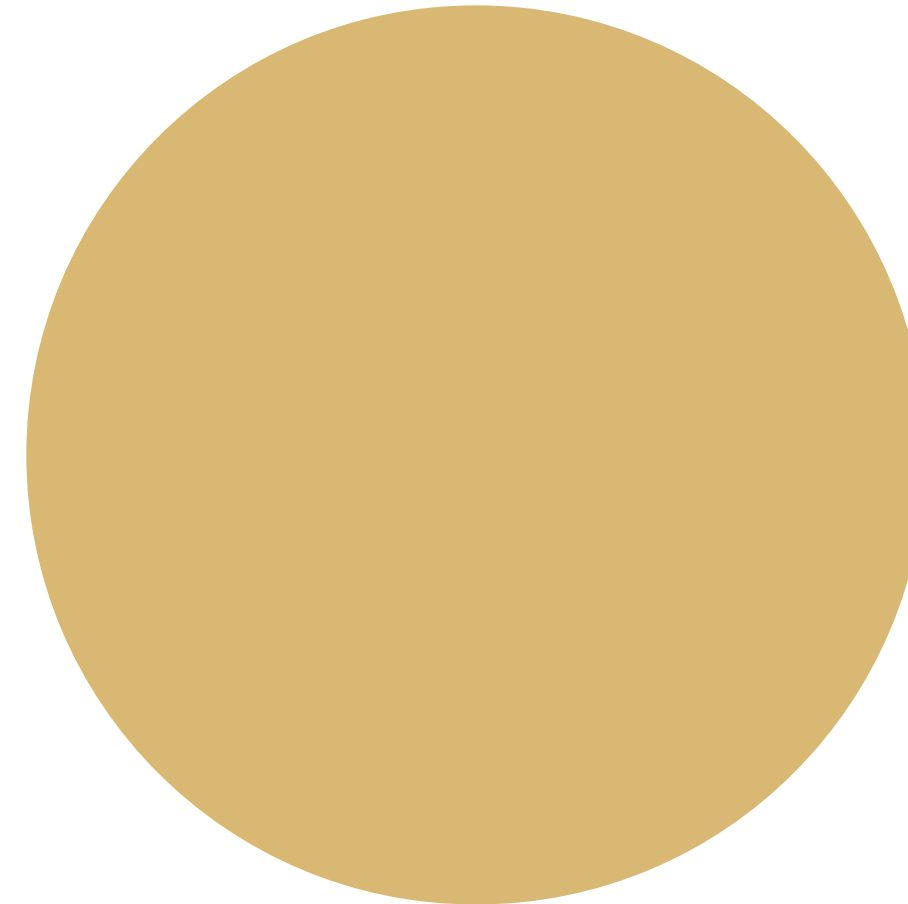
# DEFINING AN A.I LANGUAGE MODEL

An AI language model is trained on a large corpus of text to learn how to generate new text that sounds natural and coherent.

# DATASET PARAMETERS OF GPT3 VS GPT4

GPT 3

GPT 4



175, 000, 000, 000

1,700, 000, 000, 000



# Recommended A.I for Research



# Scopus A.I

- Ring-Fenced.
- Access to protected articles.
- Credible database.



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**RESEARCH  
SUPPORT PLATFORM  
AT WITS**

**Scopus AI: Trusted content. Powered by responsible AI**  
is an AI-powered tool developed by Elsevier, a global leader in scientific information and data analytics. It has been developed as a tool, to make life easier for researchers. Scopus AI can be described as a scholarly GPS - a smart companion that guides researchers through the dense forest of research papers, journals, and citations.

**Fast and Accurate Summaries:**

**Scopus AI provides expanded and enhanced summaries of key topics.**

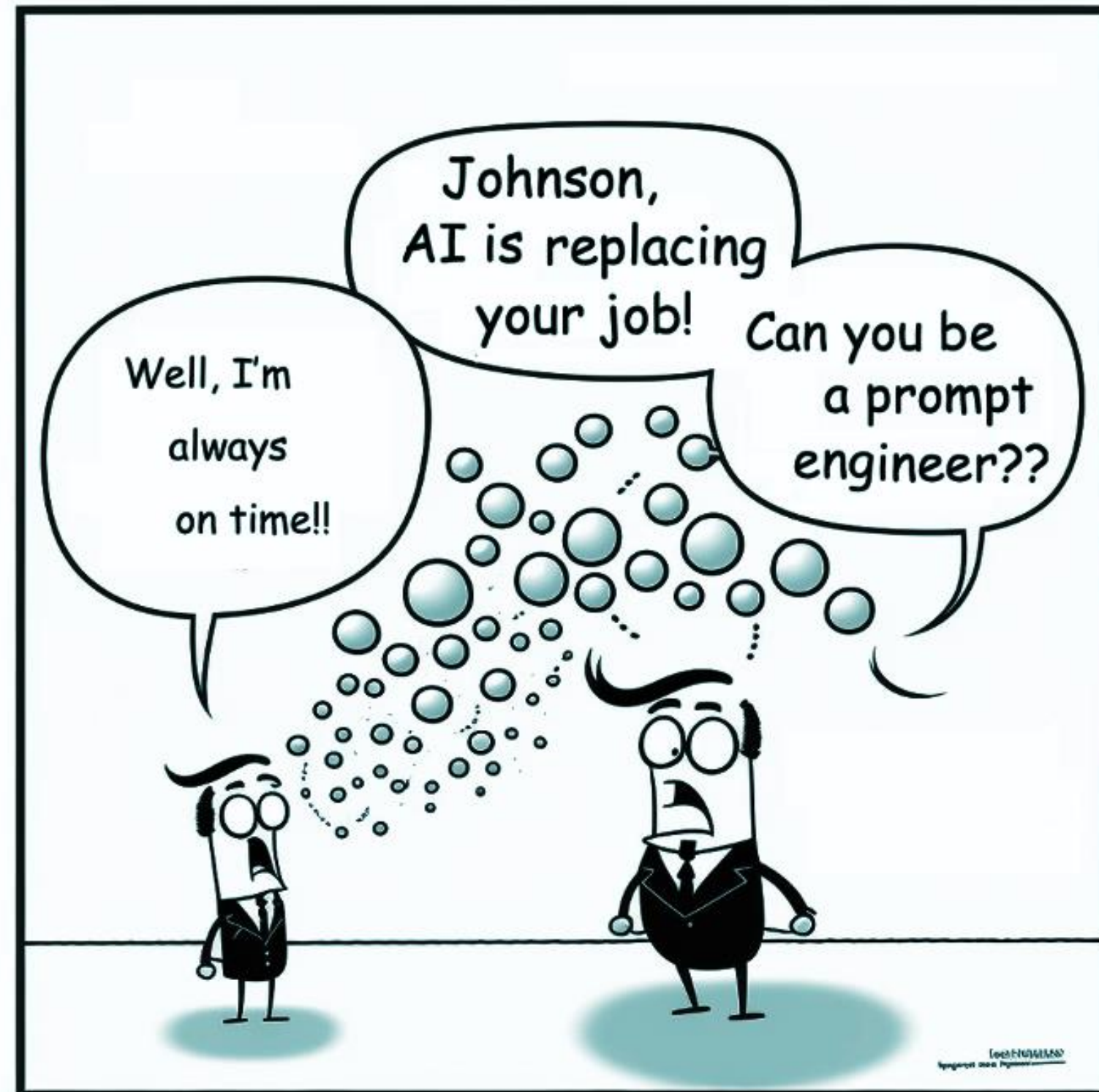
-  Scopus AI draws from the world's largest database of curated scientific literature (over 27,000 journals, 7,000 publishers, and 1.8 billion citations).
-  Scopus AI helps academic researchers to pinpoint foundational and influential papers. It's like having a treasure map to academic gold.
-  It identifies top experts in specific fields and explains their expertise.
-  Scopus AI covers ten years of content, giving researchers a well-rounded view of one's topic.

For more information, please contact your Faculty Library: <https://www.wits.ac.za/library/contact-us/>  
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# GENERATING PROMPTS FOR AI



## WHAT IS PROMPT ENGINEERING?

PROMPT ENGINEERING IS AN INCREASINGLY IMPORTANT SKILL SET NEEDED TO CONVERSE EFFECTIVELY WITH LARGE LANGUAGE MODELS (LLMS), SUCH AS CHATGPT.

## WHAT ARE PROMPTS?

"PROMPTS" ARE A WAY OF DESIGNING HOW A LANGUAGE MODEL SUCH AS CHATGPT RESPONDS AND INTERACTS WITH ITS USERS.

## IS IT IMPORTANT?

"IN TEN YEARS, HALF OF THE WORLD'S JOBS WILL NEED PROMPT ENGINEERING," DECLARED ROBIN LI, CO-FOUNDER AND CEO OF CHINESE AI GIANT, BAIDU. "AND THOSE WHO CANNOT WRITE PROMPTS WILL BE OBSOLETE."



# Principles of Prompt Engineering

- 1. Clarity:** Use precise language to avoid ambiguity.
- 2. Brevity:** Keep prompts concise for better understanding.
- 3. Guidance:** Indicate desired format or type of response.
- 4. Neutrality:** Avoid leading or biased wording.
- 5. Iterate:** Refine prompts based on feedback and results.
- 6. Experiment:** Test different prompts to optimize outcomes.
- 7. Context:** Provide necessary background for complex queries.
- 8. Safety:** Anticipate and mitigate risks of harmful outputs.

# Zero-Shot Prompt Engineering



Write 10 topics on History Taking.




1. "The Art of Eliciting a Comprehensive Medical History: Techniques and Strategies"
2. "Assessing Past Medical History: Key Aspects to Explore"
3. "The Role of Family History in Health Risk Evaluation"
4. "How to Navigate and Understand a Patient's Social History"
5. "Exploring Psychiatric History: The Relationship Between Mental and Physical Health"
6. "Effective Techniques for Understanding a Patient's Allergy and Medication History"
7. "The Importance of Obstetric and Gynecological History in Women's Health"
8. "The Role of Dietary History in Disease Prevention and Management"
9. "Exploring a Patient's Surgical and Hospitalization History: Implications for Future Care"
10. "How to Take a Detailed Occupational and Environmental History: Identifying Potential Health Risks"






# A more structured prompt

J

I would like you to develop 10 potential topics on history taking in medical practice, with each topic including a title and a one sentence description of the focus area. These topics will be designed for an audience of medical practitioners seeking to improve their skills in patient history taking. Output the results as a bulleted list. 



Sure, here are ten potential topics on history taking in medical practice:   

1. **"Mastering the Chronological Approach in History Taking"** - This topic will focus on the technique of obtaining information in a chronological order to better understand the progression and timeline of a patient's symptoms or medical condition.
2. **"Interpreting Non-Verbal Cues in Patient History Taking"** - This topic explores the importance of recognizing and understanding patients' non-verbal communication for a comprehensive and effective history taking process.
3. **"Ethical Considerations in Medical History Taking"** - The topic discusses the ethical boundaries and considerations that medical practitioners need to observe during the history-taking process, including matters of confidentiality and respect for patient autonomy.
4. **"Cultural Sensitivity in History Taking"** - This topic focuses on understanding the influence of cultural backgrounds on patients' health beliefs and practices, and how these can be incorporated into the history-taking process for a more personalized healthcare approach.



# Prompt Wording

## The STAR Method

**Situation (S):** The subject or context — e.g., “I am teaching undergraduate students a class in the basics of history taking”

**Task (T):** What you want the AI to do — e.g., “Create an Rubric for NQF Level 4”

**Appearance (A):** Desired style, format, or tone — e.g., “Provide rubric criteria for history taking in a bullet point format and make the rubric in a table format.”

**Refine (R):** Constraints, accessibility, or clarity requirements — e.g., “The rubric is out of 50 points, with the grade range headings being No Mark, Needs work, Good, Accomplished Excellent. Divide the grades between these four headings.”

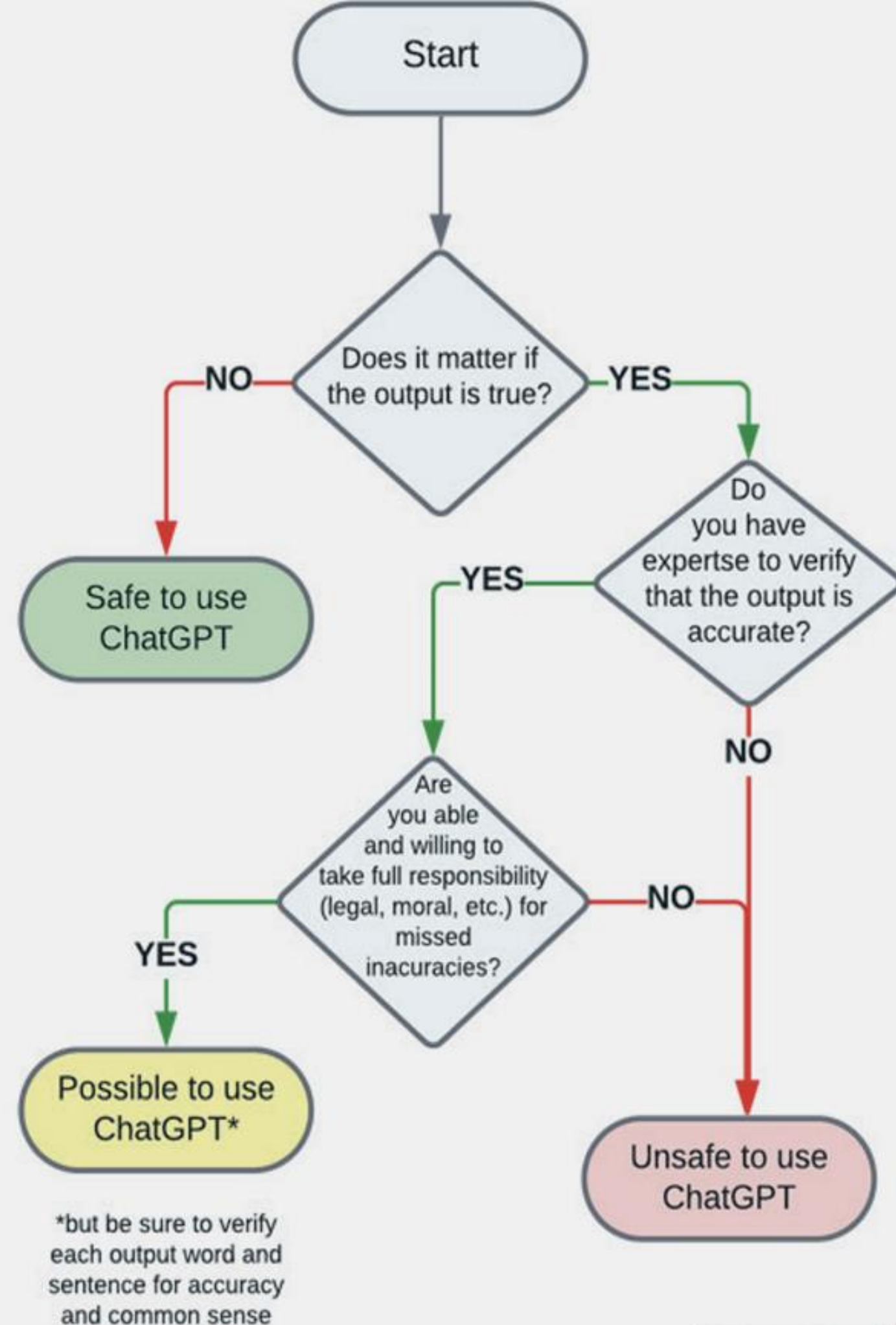
**I am teaching undergraduate students a class in the basics of history taking, create a rubric for NQF Level 4. Provide Criteria for history taking in a bullet point format and make the rubric in a table format. The rubric is out of 50 points, with the range headings being “Poor”, “Needs Work”, ‘Good”, “Accomplished”, “Excellent”.**

# Roles and Goals

- 1. Understand the importance of assigning goals:** Recognize that assigning goals to a GPT model, like ChatGPT, gives a clear direction for the interaction, ensuring the model's outputs align with your desired outcomes.
- 2. Implement goal-setting:** Incorporate specific goals in your prompts to guide the model towards desired results.
- 3. Recognize the value of role definition:** Understand that defining a role for the model can influence its behavior and shape the responses within a specific context.
- 4. Implement role definition:** Assign roles to the model, such as a historian or a medical consultant, to frame its responses with domain-specific knowledge and depth.



# ACCURACY CHECK





## Limitations

May occasionally generate  
incorrect information

May occasionally produce  
harmful instructions or biased  
content

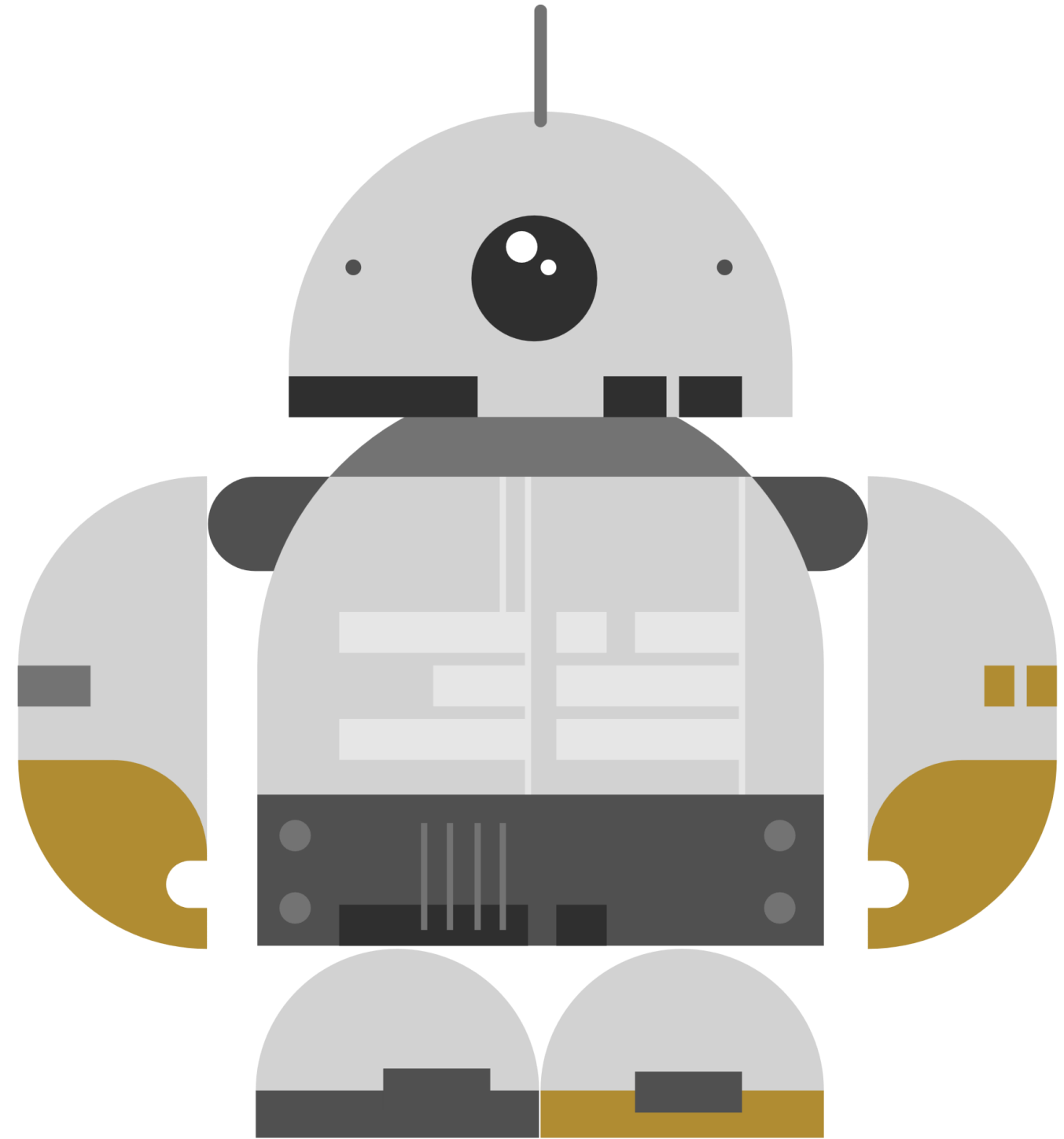
Limited knowledge of world and  
events after 2021

# **LIMITATIONS AND ETHICAL CONSIDERATIONS**



# **LIMITATIONS OF LLM'S AND AI**

- 1. Understanding.**
- 2. Context Awareness.**
- 3. Data Dependence.**
- 4. Specificity and Expertise.**
- 5. Transparency.**



# ETHICAL CONSIDERATIONS IN AI

**1. Bias and Fairness.**

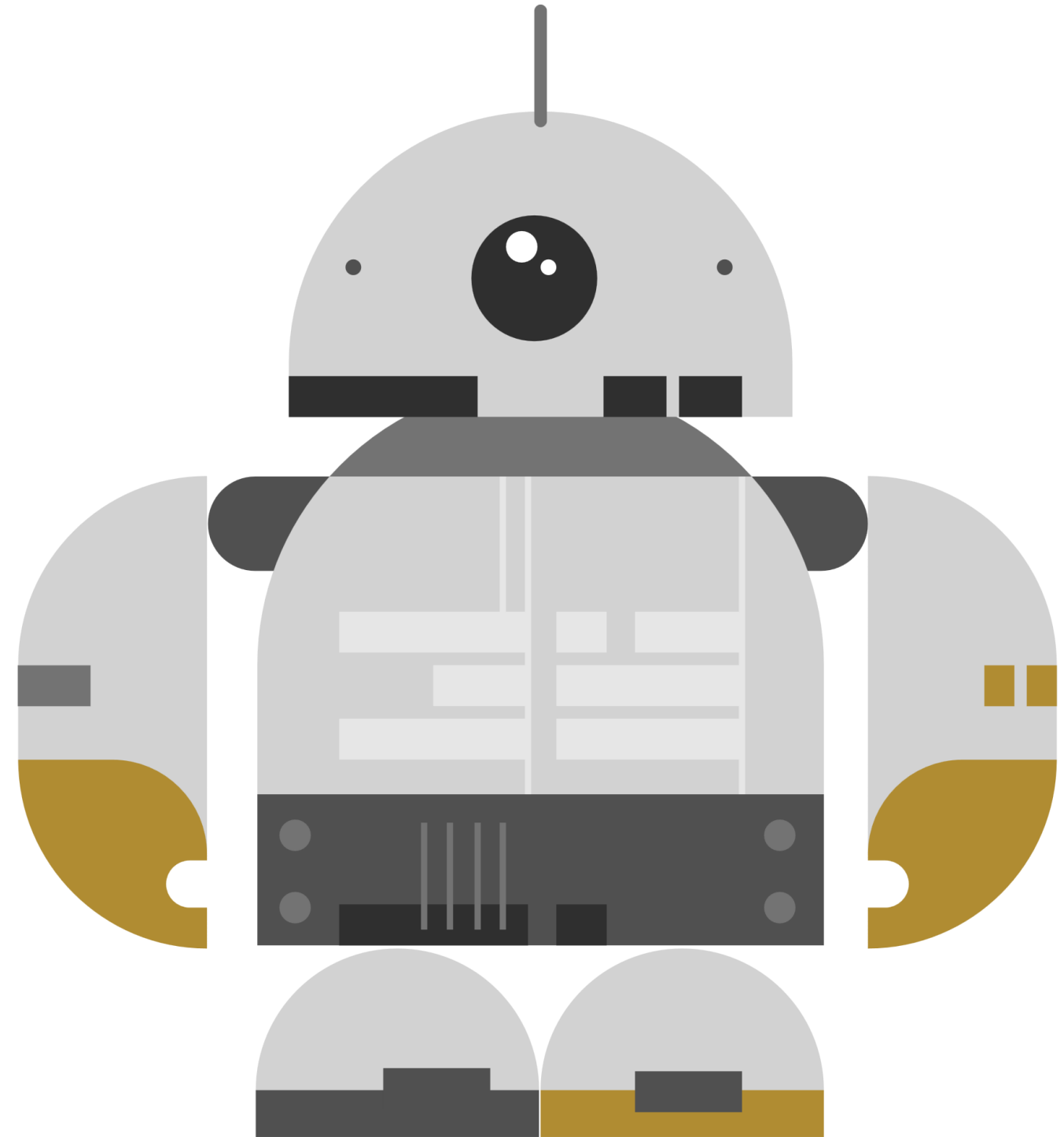
**2. Privacy.**

**3. Misinformation.**

**4. Autonomy and Responsibility.**

**5. Safety and Security**

**6. Global Impact.**



# Retraction, Retraction, Retraction

## Neurosurgical Review (Springer Nature)

**Retracted:** 200+ papers since 2024

**Reason:** Undisclosed LLM use, compromised peer review, "unclear text" 59

**Source:** [Retraction Watch](#)

## Hindawi Journals (Wiley)

**Retracted:** 8,000+ papers (2023–2024)

**Reason:** Paper mill activity, AI-generated text, citation fraud 410

**Source:** [Nature News](#)

## Environmental Science and Pollution Research

**Retracted:** Oil/gas study (2024)

**Reason:** Irrelevant AI-generated references, "nonstandard phrases" 9

**Source:** [Retraction Watch](#)

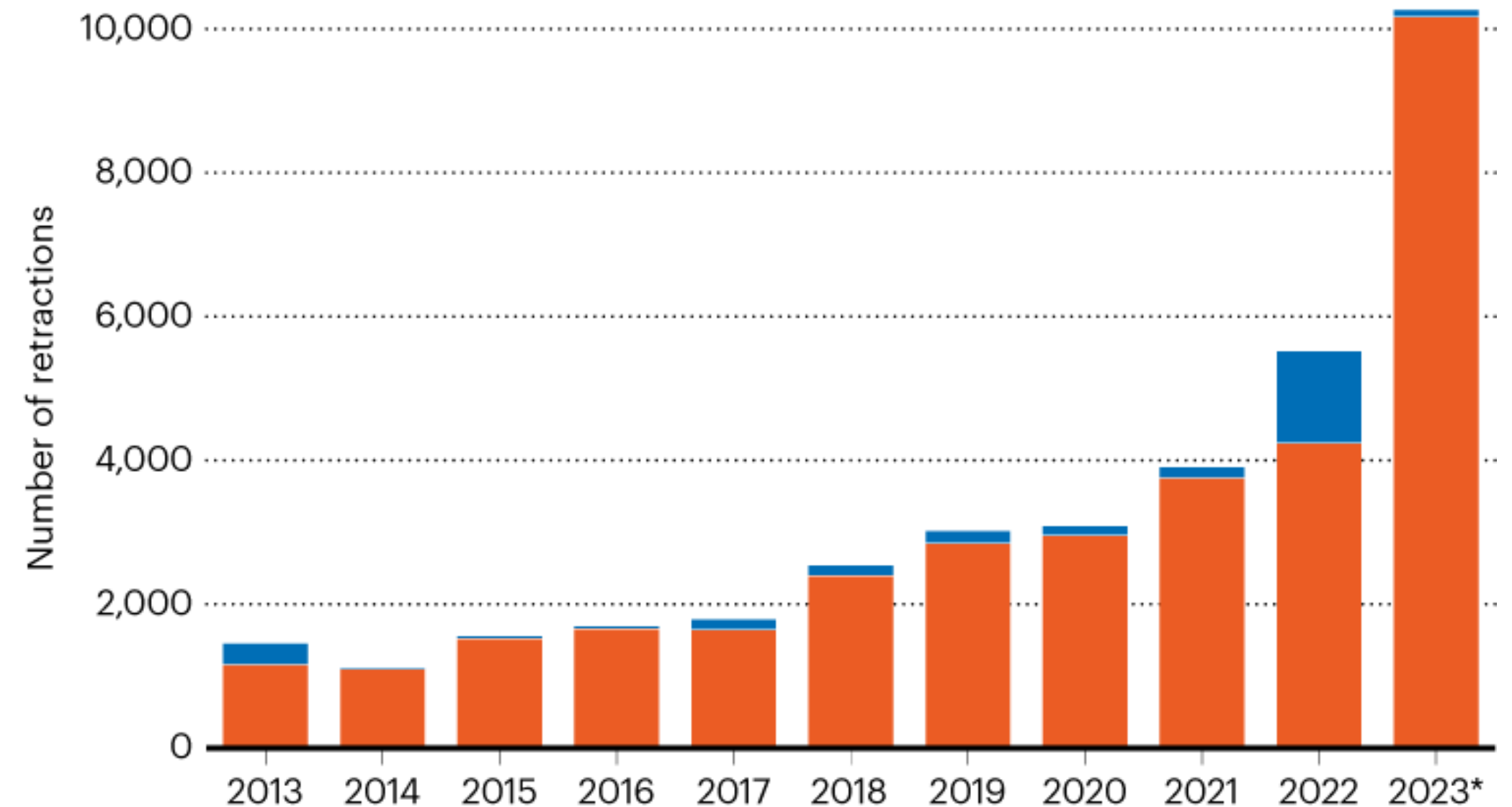


# Retraction, Retraction, Retraction

## A BUMPER YEAR FOR RETRACTIONS

Retraction notices in 2023 have passed 10,000, largely because of more than 8,000 retractions by Hindawi.

■ Journal articles ■ Conference papers



\*As of 8 December 2023

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**Brand Termination:** Wiley announced on **6 December 2023** that it would completely discontinue the Hindawi brand name. The approximately **200 Hindawi journals** will be integrated into Wiley's main portfolio by mid-2024 174.

**Operational Pauses:** In late 2022, Wiley temporarily **halted special-issue publications** across Hindawi journals for 3 months (October 2022–January 2023) to address "compromised articles" and implement stricter controls 3.

### Financial Impact:

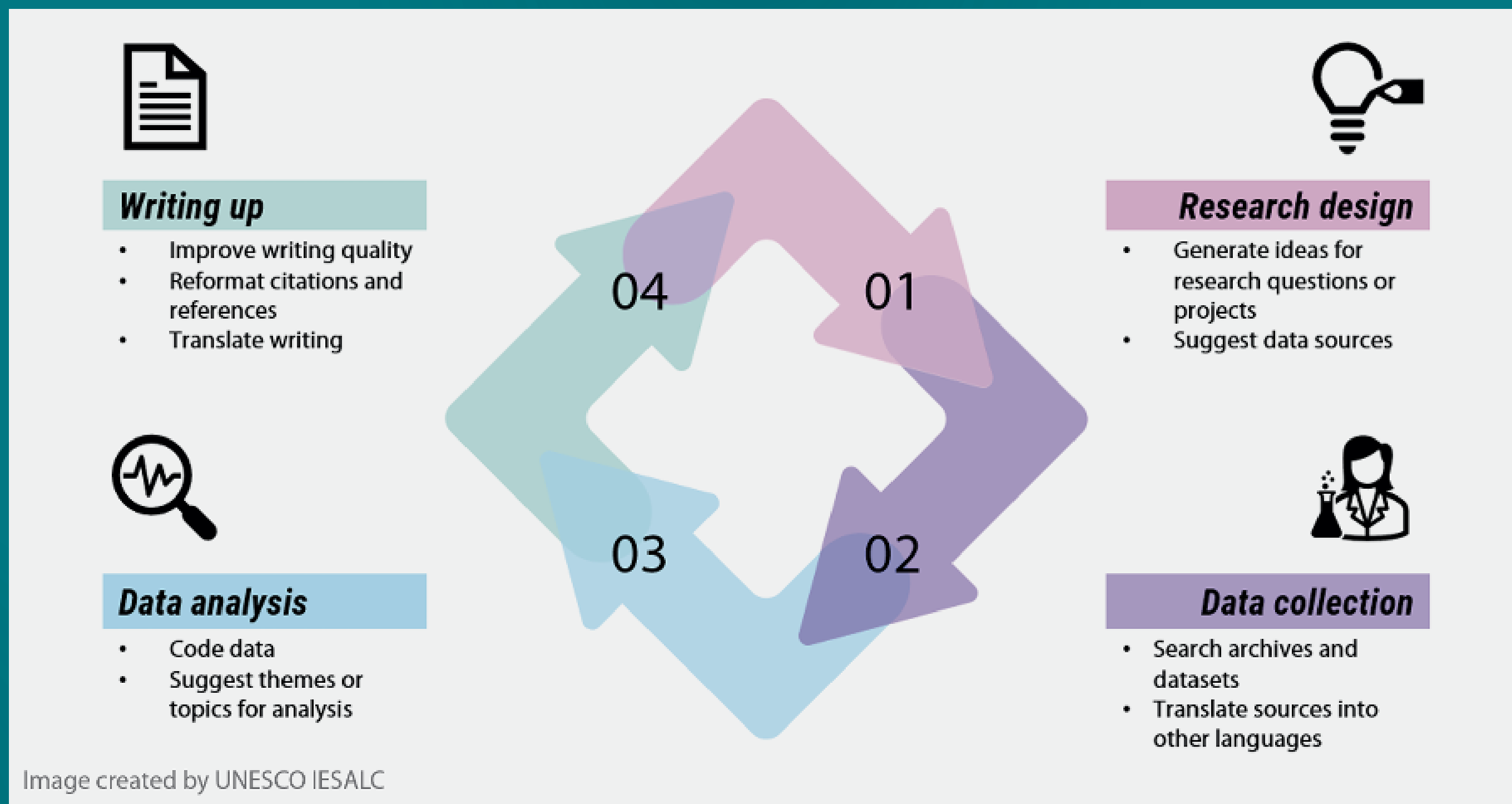
The Hindawi crisis caused an **\$18 million revenue decline** in Wiley's Q2 2024 (August–October 2023) 17. Wiley projected **\$35–40 million in total lost revenue** for the 2024 fiscal year due to the brand's issues 1. The 2022 special-issue pause alone cost **\$9 million in lost revenue** 3.

**Retraction Scale:** Over **11,300 Hindawi papers** were retracted in 2022–2024 due to paper mill activities, including AI-generated content and peer-review manipulation



# ADDITIONAL USES: RESEARCH AIDE OUTPUT

LLM's CAN BE USED BY  
RESEARCHERS AT  
DIFFERENT STAGES OF THE  
RESEARCH PROCESS.



# Agents



- An Agent is a large language model where you have predefined settings and inputs.
- Removes the need to constantly input new prompts for actions and repetitive tasks.
- The limit to what the agent can do is defined by how well your prompts are designed.



*Thank  
You*