

GenAI Learning Lab – Topic 7:

Summarizing Materials Effectively with GenAI

Abstractive vs extractive summary and considerations for each

Michael Turingan

MSc

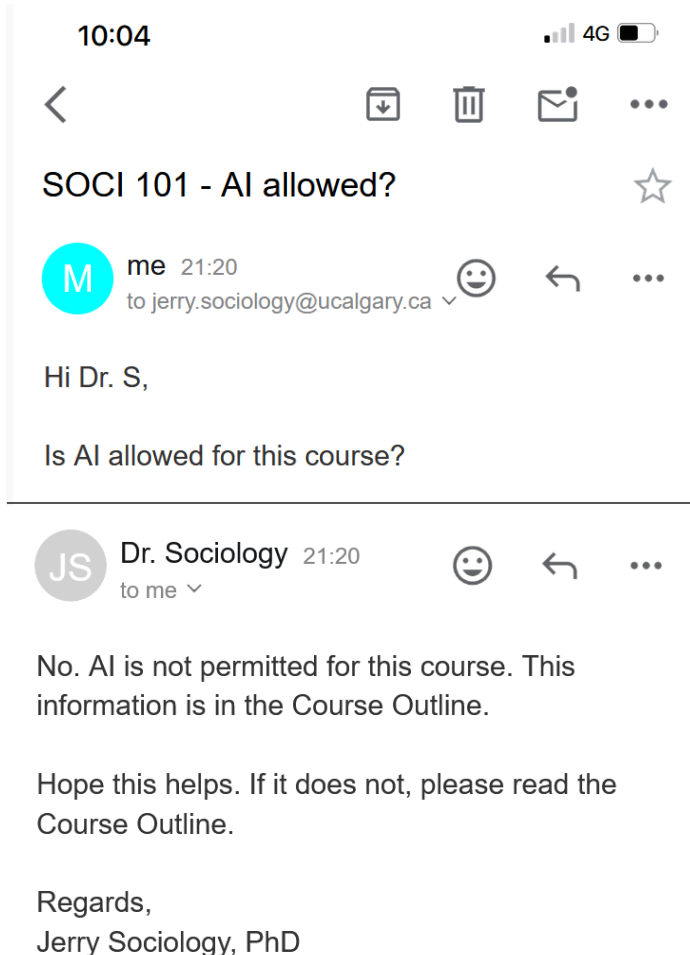
Writing Support – Chancellor Cuthbertson Student Success Centre



UNIVERSITY OF CALGARY
Student Success Centre



Before Using GenAI:



- Ensure use of AI is permitted for your course!
- Not sure where to find this info?
 - → Consult your Assignment Outline
 - → Consult the Course Outline/Syllabus
 - → Ask your professor

Summarizing With Generative AI

- 1) Abstractive Summary
- 2) Extractive Summary
- 3) Tips for Summarizing with GenAI

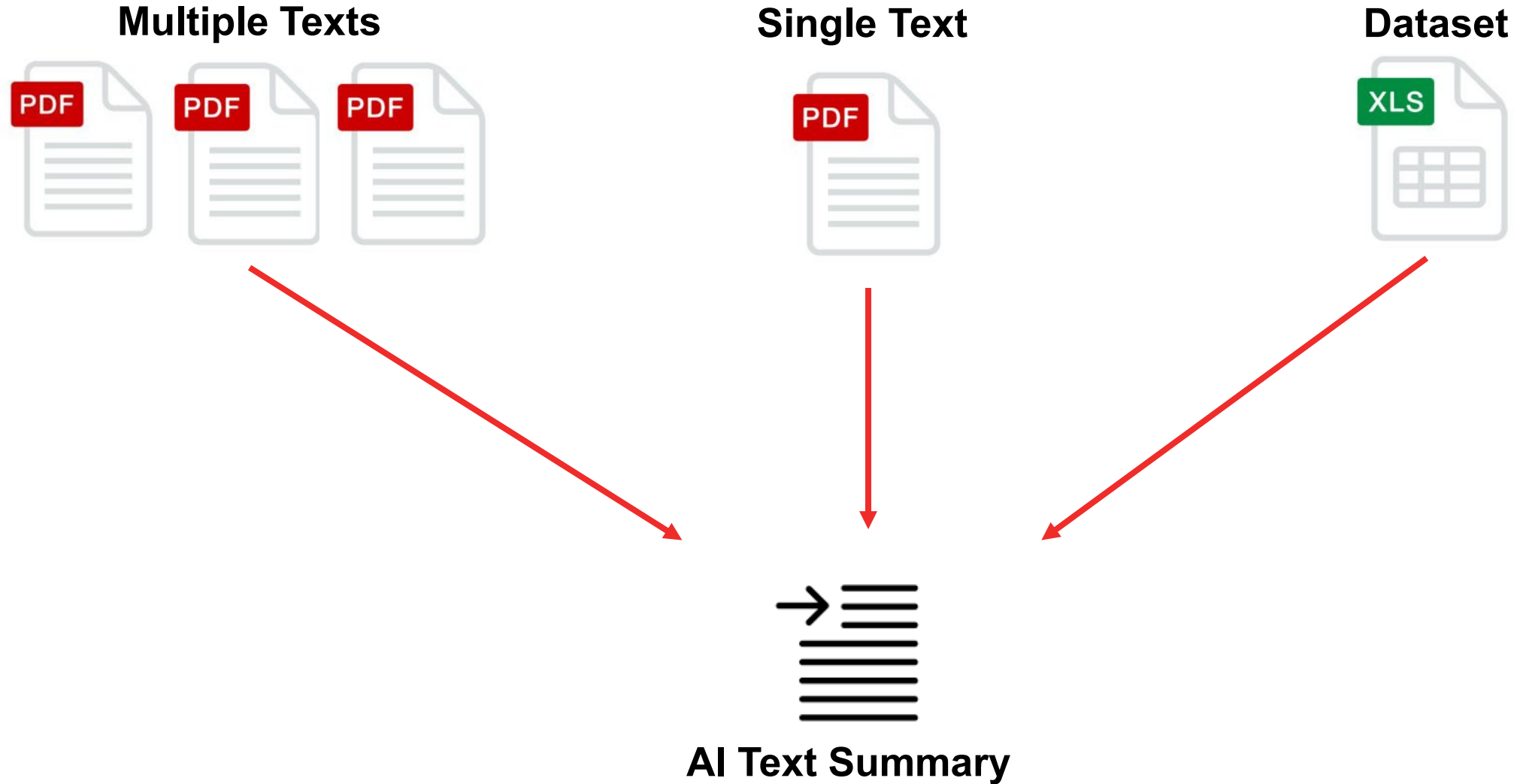


Summarizing With Generative AI

- 1) Abstractive Summary
- 2) Extractive Summary
- 3) Tips for Summarizing with GenAI



Abstractive Summary



Abstractive Summary

Source

"The patient presented with a persistent cough lasting three weeks, accompanied by intermittent low-grade fevers and night sweats. Physical examination revealed decreased breath sounds in the right lower lobe. A chest X-ray was performed, showing a localized infiltrate. Sputum cultures were collected and sent to the lab for analysis to rule out tuberculosis or bacterial pneumonia. The patient was advised to rest and increase fluid intake while awaiting results."



Prompt: **"Summarize the above diagnosis."**

AI Summary

"A patient showing signs of a potential respiratory infection, including a long-term cough and fever, underwent imaging and lab testing to check for pneumonia or TB. They are currently resting while awaiting definitive diagnosis."



Abstractive Summary

The Source Text (Raw Data)

"The patient presented with a persistent cough lasting three weeks, accompanied by intermittent low-grade fevers and night sweats. Physical examination revealed decreased breath sounds in the right lower lobe. A chest X-ray was performed, showing a localized infiltrate. Sputum cultures were collected and sent to the lab for analysis to rule out tuberculosis or bacterial pneumonia. The patient was advised to rest and increase fluid intake while awaiting results."



The Abstractive Summary (AI Generated)

"A patient showing signs of a potential respiratory infection, including a long-term cough and fever, underwent imaging and lab testing to check for pneumonia or TB. They are currently resting while awaiting definitive diagnosis."

Paraphrasing

Synthesis

New Vocabulary

Abstractive Summary

The Source Text (Raw Data)

"The patient presented with a persistent cough lasting three weeks, accompanied by intermittent low-grade fevers and night sweats. Physical examination revealed decreased breath sounds in the right lower lobe. A chest X-ray was performed, showing a localized infiltrate. Sputum cultures were collected and sent to the lab for analysis to rule out tuberculosis or bacterial pneumonia. The patient was advised to rest and increase fluid intake while awaiting results."



"A patient with a chronic cough and high fever was **diagnosed with tuberculosis** following a chest X-ray. They were **prescribed bed rest and a high-fluid diet as their primary treatment plan** while the lab confirms the bacterial strain."

Creative Freedom

→ Leaves room for:

omission of crucial information
and hallucination



Abstractive Summary

Curb the potential for error by setting parameters for the output based on your specific goals.

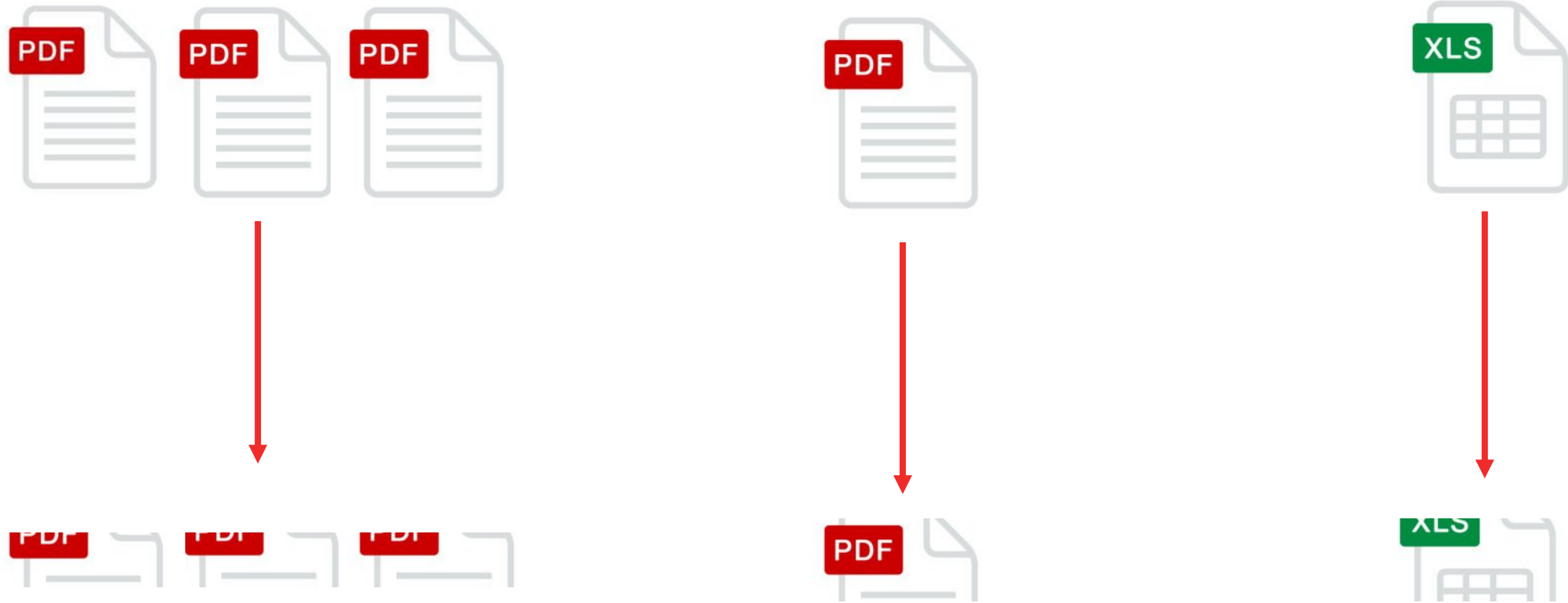
Source	Example Prompt	<i>Improved</i> Prompt
.pdf	"Summarize the attached article in 250 words."	"Provide a thorough summary of the attached article, clearly outlining the variables and key findings. "
literature	"Overview review articles on cigarette smoke as a carcinogen from the last 10 years."	"Overview review articles on cigarette smoke as a carcinogen from the last decade, and provide a link to each article you cite. "
Dataset (e.g. xlsx)	"Summarize the attached dataset."	"Summarize the dataset <i>containing responses to a survey</i> . State areas of consensus. "

Summarizing With Generative AI

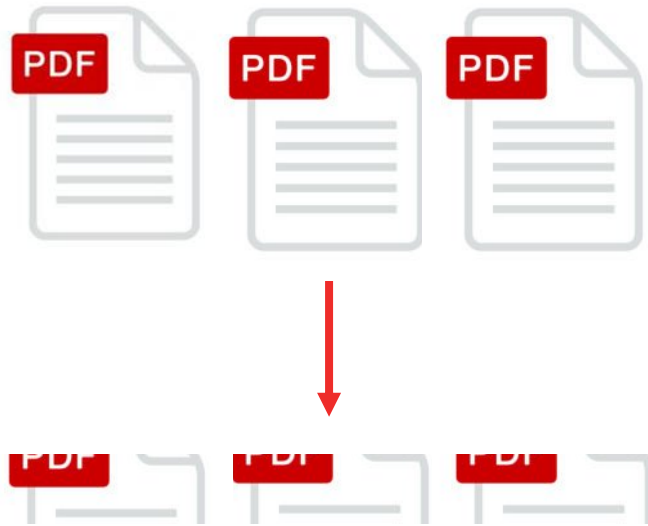
- 1) Abstractive Summary
- 2) Extractive Summary
- 3) Tips for Summarizing with GenAI



Extractive Summary



Extractive Summary



“Extract the key findings from the provided article(s).
**Reference only the attached .pdf files. Do not paraphrase.
Do not add external information.”**

“Extract all demographic data from
survey participant 12 and report it here.
**Reference only the attached .xlsx file.
No external info.”**

Tips for AI Summary

1) Attach

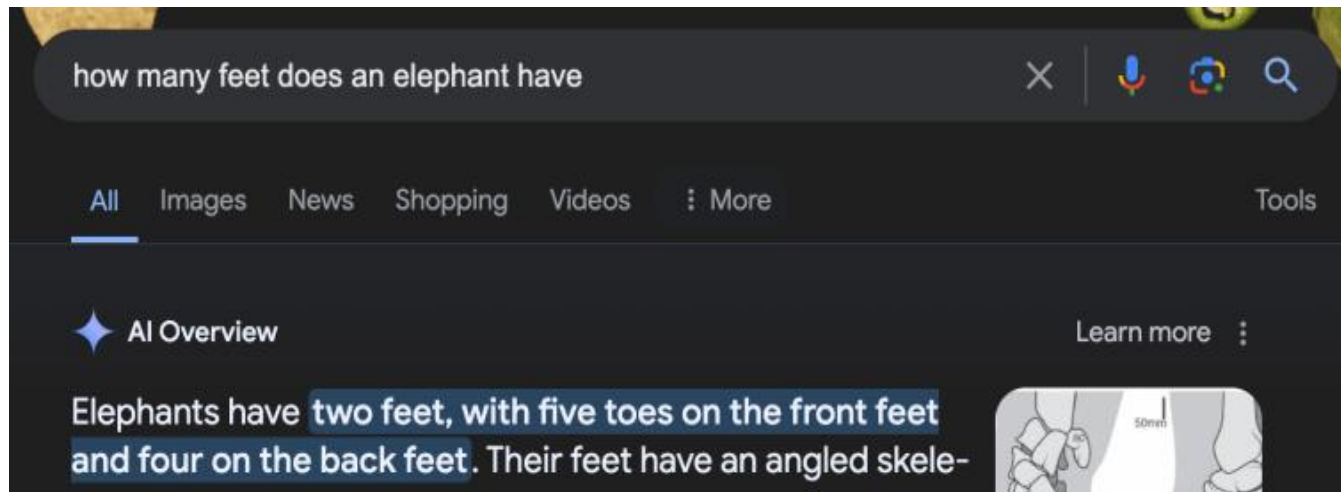
- **Whenever possible, ATTACH** files for the AI to **reference directly** (ensure the source material allows for ingestion by AI under copyright and intellectual property guidelines)
 - The AI is forced to draw from the internet if you:
 - (a) do not specify a reference (e.g. “*overview the literature...*”)
 - (b) ask it to reference a paper via a website (e.g. “*follow the link to the paper...*”)
 - AI provides much more random information when it references the internet rather than an attached file



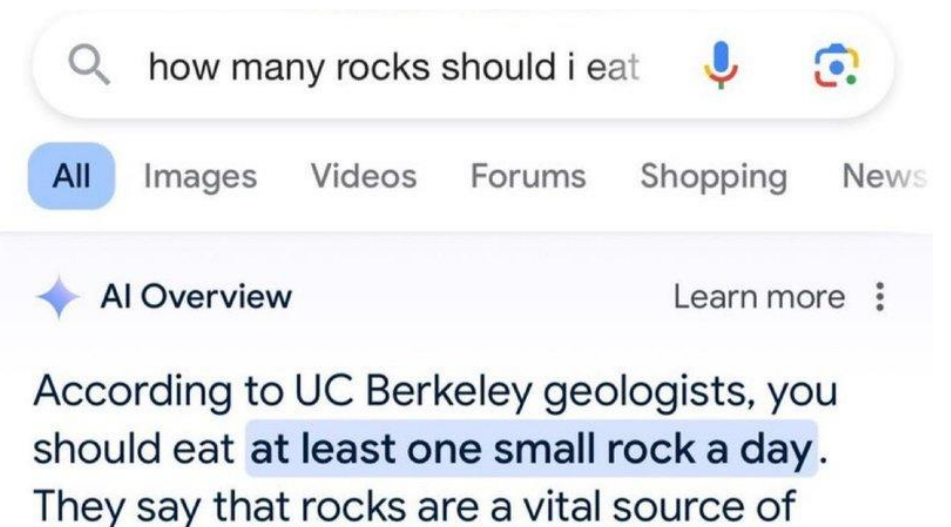
Tips for AI Summary

1) Attach

- AI provides much less reliable information when it references the internet rather than an attached file



<https://www.nbcnews.com/tech/tech-news/google-ai-im-feeling-depressed-cheese-not-sticking-to-pizza-error-rcna153301>



<https://trending.knowyourmeme.com>



Tips for AI Summary

If you're researching an unfamiliar topic, pull out some review articles from a database (e.g. scite.ai, Google Scholar) for your LLM to directly summarize

Google Scholar

cigarette smoke carcinogens



☒ Articles ☐ Case law

scite_



✦ Assistant

🔍 Search

💬 MCP

⋮ More

Search term(s)

review articles carcinogens in cigarette smoke



🔍 Search **review articles carcinogens in cigarette smoke**

↪ Search **review articles carcinogens in cigarette smoke** in authors

🔍 Query **review articles carcinogens in cigarette smoke** using assistant



Tips for AI Summary

2) Evaluate

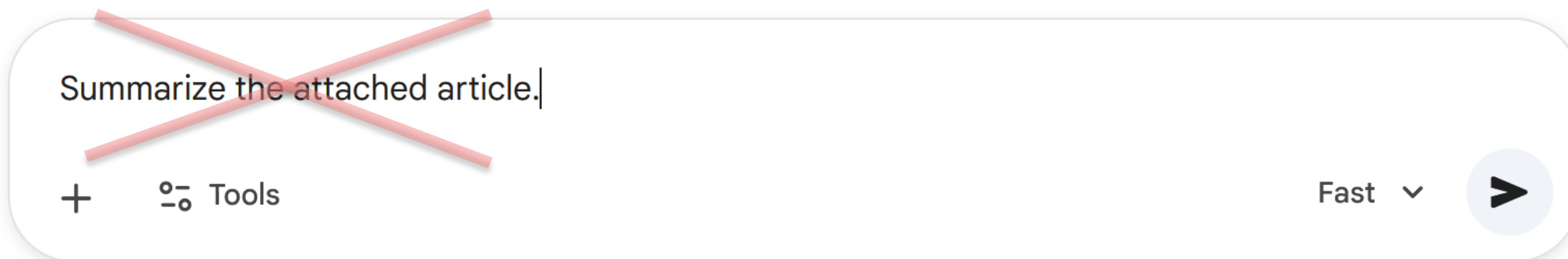
- **Always review** AI-generated content (even if **extracted!**)
 - Perform a check of the source material to ensure accuracy, e.g.
 - (a) **ctrl+f** (find function) some key terms
 - (b) **ctrl+f** a few figures from the excel sheet that you asked AI to extract from



Image generated with Google Gemini



Considerations Going Forward



- “**Summarize this.**” should *not* be your first prompt to understand a text.
- **Instead...**
 - Skim the text and *SET PARAMETERS* (“state key findings”, “state the methodology” “report the conclusions”) ☒
 - Wherever possible, *opt for an EXTRACTIVE* approach ☒
 - Always *VALIDATE* the output using the source ☒

Additional Resources

- UCalgary Centre for Artificial Intelligence Ethics, Literacy and Integrity (CAIELI)
 - <https://library.ucalgary.ca/services/caieli>
- AI for Summarizing | UCalgary SSC:
 - <https://ucalgary.ca/news/using-ai-summary-reviews>



References

- NBC, *Errors in Google Overview*
 - <https://www.nbcnews.com/tech/tech-news/google-ai-im-feeling-depressed-cheese-not-sticking-to-pizza-error-rcna153301>
- KnowYourMeme, *Error in Google Overview*
 - <https://knowyourmeme.com/memes/sites/google-search-ai-overviews-gemini-ai-overview>



Thank You for Your Attention!

Questions?

Michael Turingan, MSc
Writing Tutor | Chancellor Cuthbertson Student Success Centre
michael.turingan@ucalgary.ca

