

GABY SAYS GABY DIT

EXPERIMENTING WITH GENERATIVE AI FOR INFORMATION SERVICES

Megan Fitzgibbons, Aviva Majerczyk, Yara Stouhi,
Francisco Berrizbeitia, Joshua Chalifour, & Olivier Charbonneau

Concordia University





Agenda

01

PURPOSE

Overview and
acknowledgements

02

APPROACH

Technical design
and initial
observations

03

EVALUATION

Approaches and
considerations
for evaluation

04

NEXT STEPS

Future technical
developments
and evaluation
plans

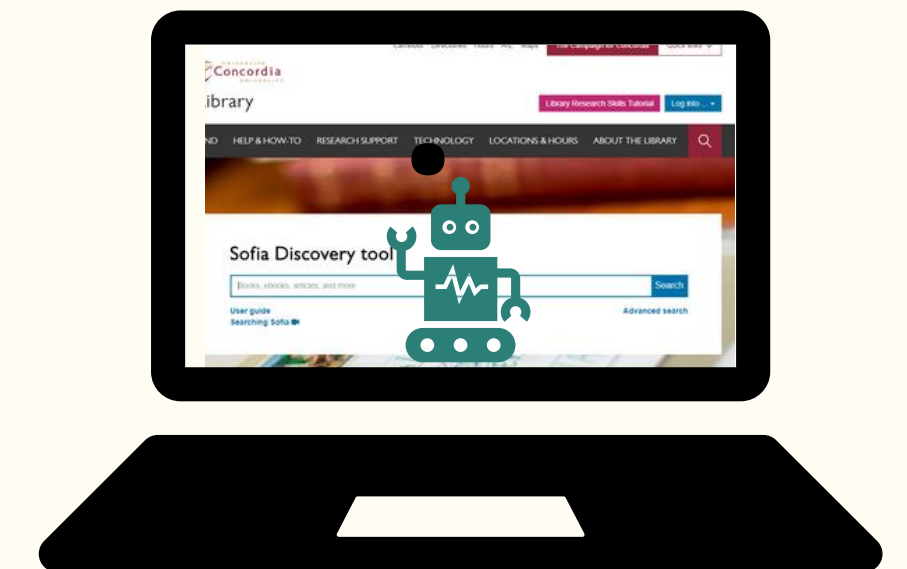
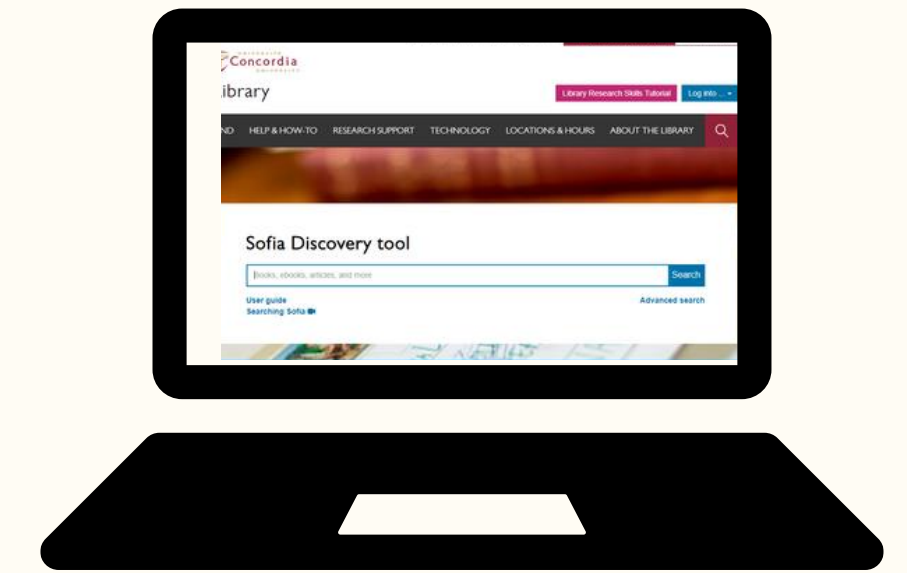


Purpose of this research

Develop and share knowledge

- To create and validate evaluation protocols
- To connect practical findings to larger questions
- To compare chatbot performance to searches / web pages

Not to replace
library workers



Funding and partners

Merci!

FUNDING:

- Concordia Applied AI Institute: Collaborations with Industry Grant (2024-2025)
- Concordia Library Research Grant (2023-2024)



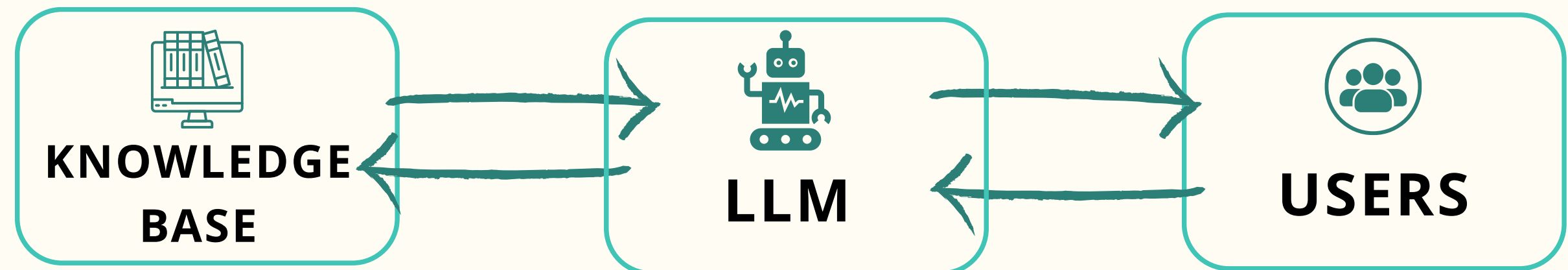
PARTNER:

- La Cinémathèque Québécoise
- Seeking other non-profit partners in the GLAM sector – let us know if your organization is interested!

Can we build an AI agent tuned with our data?

OUR IDEA

Use the LLM as a middle-layer (interface) to facilitate the interaction between users and the knowledgebase



Three approaches

Prompt

LLM

PROMPT ENGINEERING

Extract information from:
Library website

Knowledge base
(Swallow)

Embeddings

Q&A reshape

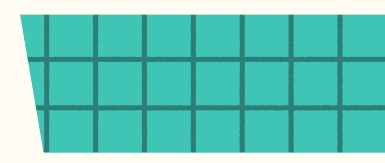
Vector database

LLM

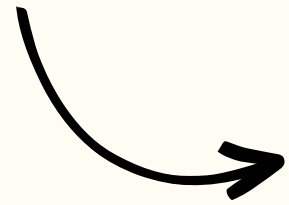
LLM

LANGCHAIN

FINE TUNING



First version of Gaby



You: hello

Chatbot: I'm sorry, I don't understand the question.

You: What is the purpose of this policy

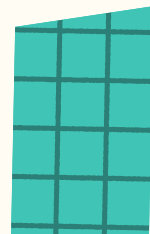
Chatbot: The purpose of this policy is to ensure that priority of use of computer facilities is given to Concordia students, faculty and staff; to define appropriate use of computer facilities; and to ensure that the Library complies with the contracts signed with publishers of electronic information.

You: what is a primary user

Chatbot: A primary user is a member of the Concordia University community, which includes all students, faculty, and administrative and support staff of the University, who hold a valid Concordia University I.D. card.

You: can i use the Concordia library computers for non-academic work?

Chatbot: No, the purpose of the library computers is to advance the academic goals of learning, teaching and research, and to assist in administrative operations which support these goals. Extramural users are only allowed to borrow items from the Concordia



Characteristics and observations

OPENAI API

- GPT Base model
- 175B parameters
- Knowledge very limited to the data that was fed to it
- Very reliable, doesn't hallucinate or lie

LLAMA 2 API

- 7B parameters
- Understands natural language better
- Capable of referring to human librarians when it's unsure
- Hallucinates with large datasets

Performance

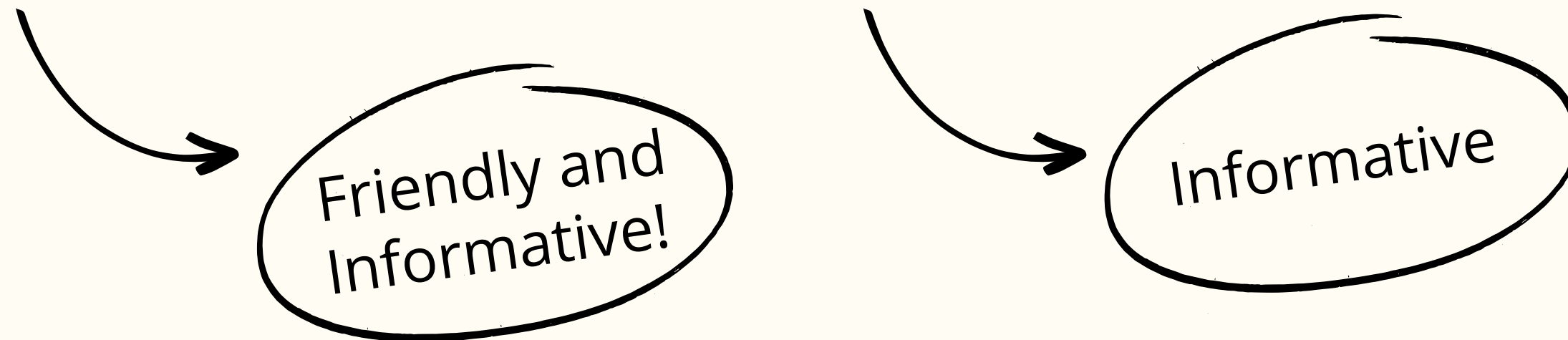
How is Gaby affected?

- LLM used
- Structure of the data
- Amount of Data
- Choice of words



Data structure matters

Video Transcript vs. Website Content





Ideal response characteristics

IF QUESTION IS IN THE SCOPE

- Provides accurate information
- Points to source of information
- Gives clear steps

IF QUESTION NOT IN THE SCOPE

- Provides guidance as to where to find the information
- Refers to library staff
- Admits that it doesn't know





Example response 1

GABY WITH OPENAI



You: do you know the opening hours of the Webster Library?

Gaby: I'm sorry, I don't know the opening hours of the Webster Library.

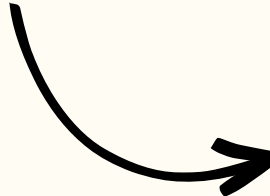




Example response 2

GABY WITH LLAMA 2

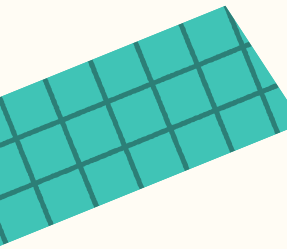
You: do you know what are the opening hours of the Webster Library?



Gaby: I'm just an AI, I don't have access to real-time information about the Webster Library's opening hours as it is subject to change and may vary depending on the day of the week and time of year. However, I can suggest ways for you to find out the current opening hours of the Webster Library.

1. Check the library's website: You can visit the Webster Library's website and look for the section on hours and locations. This information is usually available under the "Hours" or "Locations" tab.
2. Contact the library directly: You can call the Webster Library during their operating hours to inquire about their current opening hours. You can find their contact number on their website or in the Reader's Guide to Periodical Literature.
3. Use a online directory: You can use an online directory such as Google Maps or Yelp to search for the Webster Library's address and opening hours. These directories often have up-to-date information on library hours and locations.

Remember to always double-check the opening hours before visiting the library to ensure that you don't miss their operating hours.



Preliminary evaluation rubric

Question	Accuracy	Connection to knowledge base	Completeness
What if I can't buy my textbooks? Can I rent textbooks at the library?	2	1	3
What is the Find it! @ Concordia button for? What should I do if it doesn't work?	2	2	2
I don't have time to go to Loyola to get a book. Is there a way to have someone send it on the shuttle or something?	2	2	2
How can I find out if the library has the article I need?	2	2	1
How can I tell if an article is good?	2	3	2
How can I tell if something is a primary source?	3	3	2

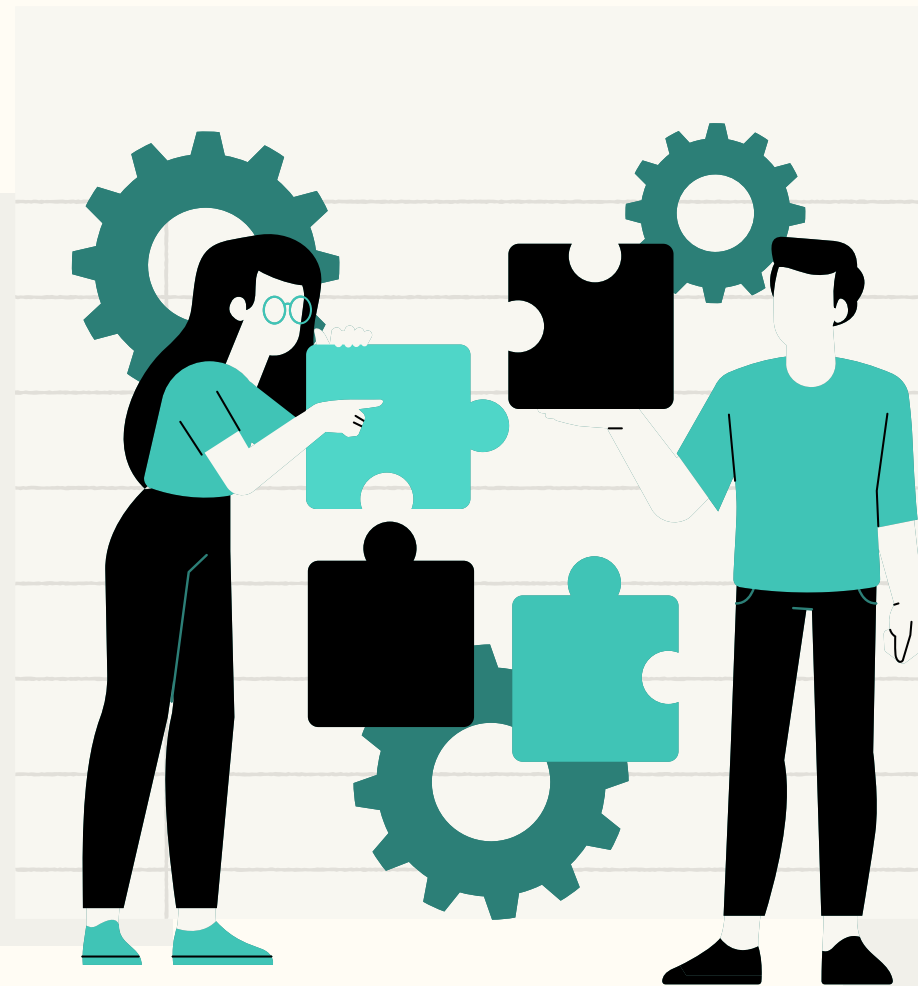
Test of Gaby with OpenAI layer and knowledge base, on a scale of 1-3

Evaluation

Is it useful and does it provide a meaningful experience?

ACCURACY

Benchmarking tool



USEFULNESS

User testing / field work

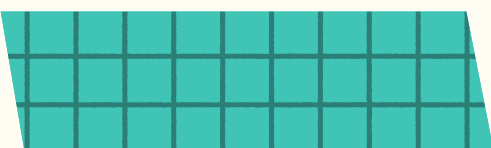
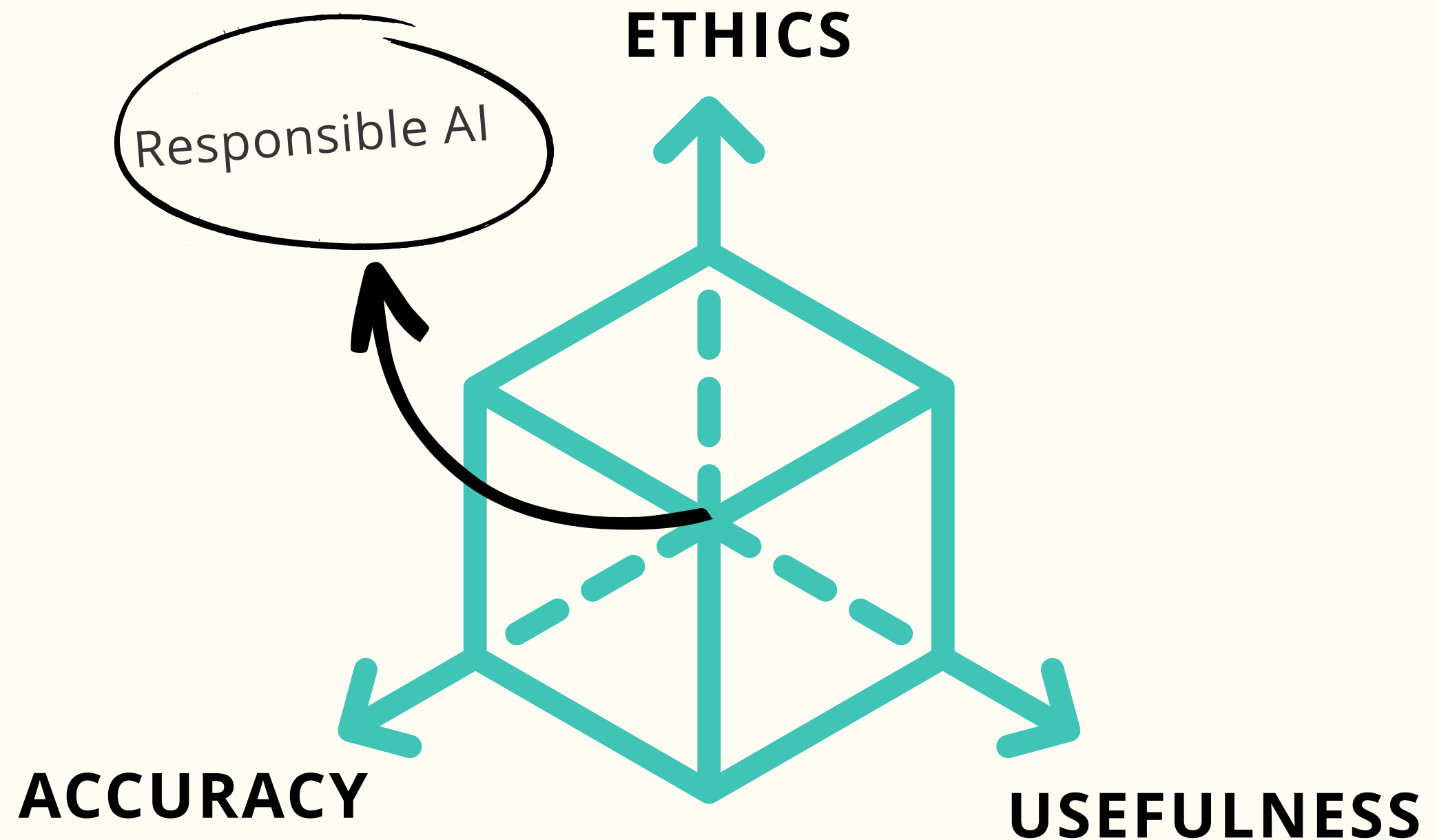
From Library of
Congress Labs AI
planning

Use case worksheet

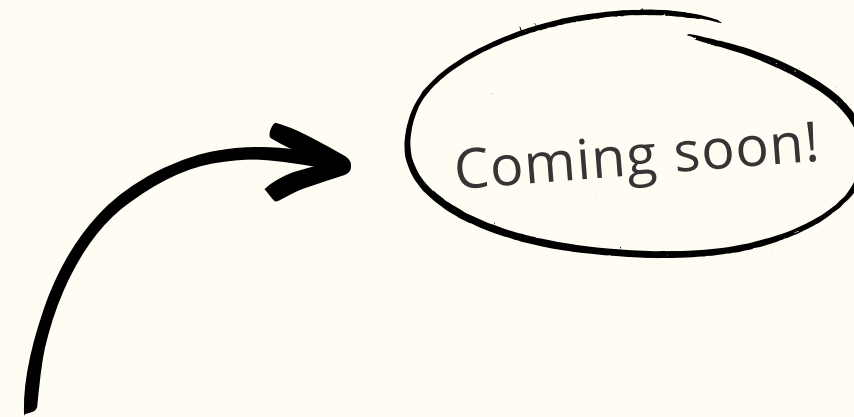
Name & Dept:		Use Case: (inquiry)	
Date:			
1. Data: Do you have data to support this use case? If so, include any data that is necessary to answer this inquiry (i.e. Sites, documents, etc). Do you have sufficient data that can train the AI model to properly field this inquiry?		5. Sensitivity: Is the inquiry from the student potentially sensitive? Does it include any personal identifications? Does it contain any details about an academic project that would be harmful to input into a language processing system (think about: copyright, academic integrity, personal information)	
2. Composition: What is represented in the data? Describe the language, time period, genre and other descriptive information about the intellectual content of the data.			
3. Compilation: How were the webpages needed compiled? What methods were used to determine what information is needed to answer this inquiry?		6. Error Impact: What is the cost or impact of mistakes or errors in this use case?	
4. People: Who is depicted in the data? Are people depicted in the data described in a potentially outdated or harmful way? Are the people depicted in the data aware their data will be part of an AI system?		7. Data provenance: Describe the relevant background on where the data comes from, why it was created, by whom, where, and when.	

Evaluation concerns

Multiple dimensions of accuracy, usefulness, and ethics



Next steps



FINE-TUNING

Different LLM and SLM models.
Open AI vs Llama 2

SCOPE EXPANSION

Expanding the scope of the
knowledge

UX DESIGN

Building an interface to enhance
user experience



EVALUATION

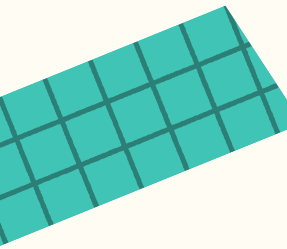
Protocol development

RESPONSIBLE AI

Holistic evaluation



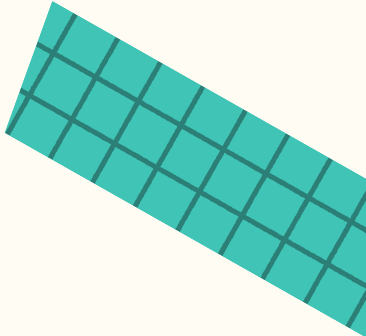
References

- Hobert, S. (2019). How Are You, Chatbot? Evaluating Chatbots in Educational Settings – Results of a Literature Review. *Gesellschaft für Informatik*. https://doi.org/10.18420/delfi2019_289
 - Lappalainen, Y. and Narayanan, N. (2023) Aisha: A Custom AI Library Chatbot Using the ChatGPT API. *Journal of Web Librarianship* 17, no. 3, 37-58. <https://doi.org/10.1080/19322909.2023.2221477>.
 - Lai, K. (2023). How Well Does ChatGPT Handle Reference Inquiries? An Analysis Based on Question Types and Question Complexities. *College & Research Libraries*, 84(6). <https://doi.org/10.5860/crl.84.6.974>
 - Library of Congress. (2024). LC Labs AI Planning Framework. <https://github.com/LibraryOfCongress/labs-ai-framework>
 - Rodriguez, S. and Mune, C. (2022). Uncoding Library Chatbots: Deploying a New Virtual Reference Tool at the San Jose State University Library. *Reference Services Review* 50(3/4), 392–405. <https://doi.org/10.1108/RSR-05-2022-0020>.
- 



THANK YOU!

WHAT ARE YOUR QUESTIONS?



Please contact us to discuss further.

megan.fitzgibbons@concordia.ca