



MEDMIND

An AI-powered chatbot to assist with
medical information retrieval and
summarization

OUR TEAM



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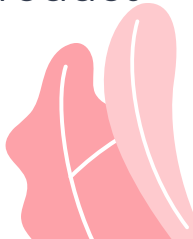
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WHAT PROBLEM ARE WE TRYING TO SOLVE?

Accessing and understanding medical information is challenging, hindering informed healthcare decisions.

Keeping Updated: Healthcare professionals struggle to stay updated with the latest research findings due to the overwhelming volume of medical literature.

Avoiding Hallucinations: Existing AI models may produce inaccurate or misleading responses, posing a risk to users seeking **reliable** medical information.





SOLUTION

MedMind is a **Retrieval Augmented Generation (RAG) chatbot** that addresses these challenges by providing a **user-friendly platform** to access **reliable** and **up to date medical information** while **mitigating the risk of hallucinations** in AI-generated responses.



Example Questions

What are the symptoms of COVID-19?

How can I manage my diabetes?

What are the potential side effects of ibuprofen?

What lifestyle changes can help prevent heart disease?

MedMind Chatbot

Ask your medical questions and get reliable information!

You:

Start New Chat

How to use MedMind

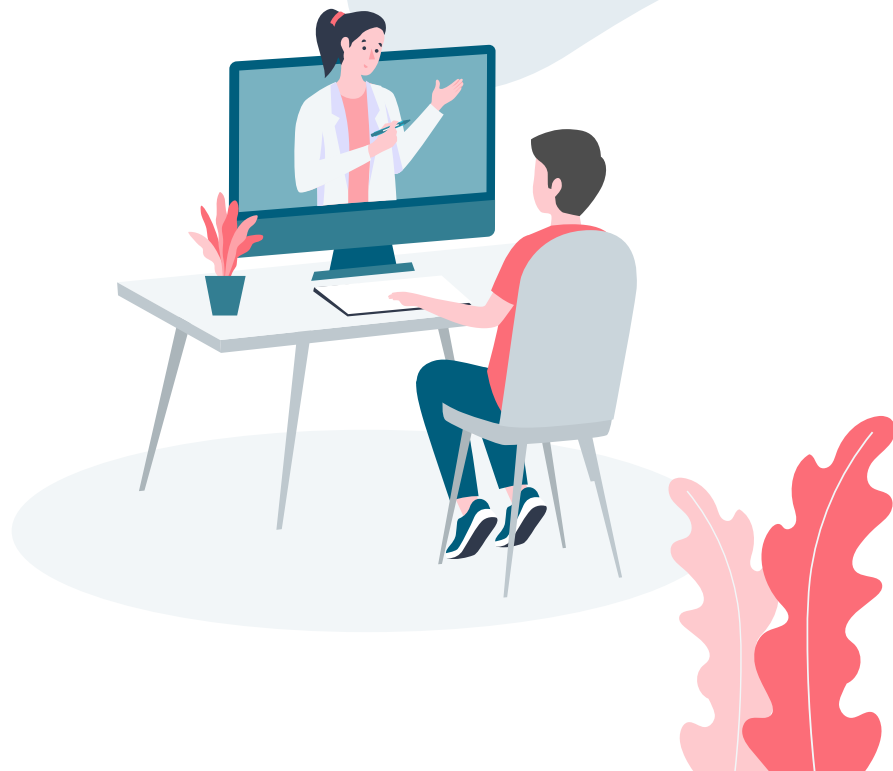




HOW DOES MEDMIND WORK?

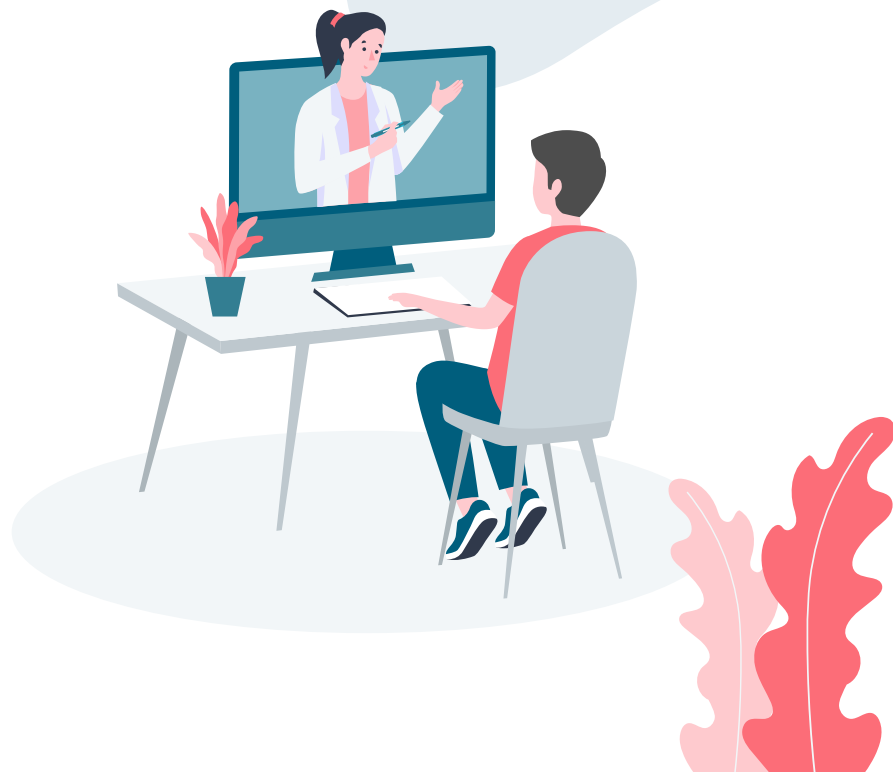
HOW DOES MEDMIND WORK? (1/2)

1. **User Input:** Users type their medical questions into the chat interface
2. **Query Processing / Source Retrieval:** MedMind processes the user input and retrieves information from Document uploaded first, then tries the Vectara Corpus, the PubMed repository, and Google Search APIs if the results from previous sources are not sufficient.

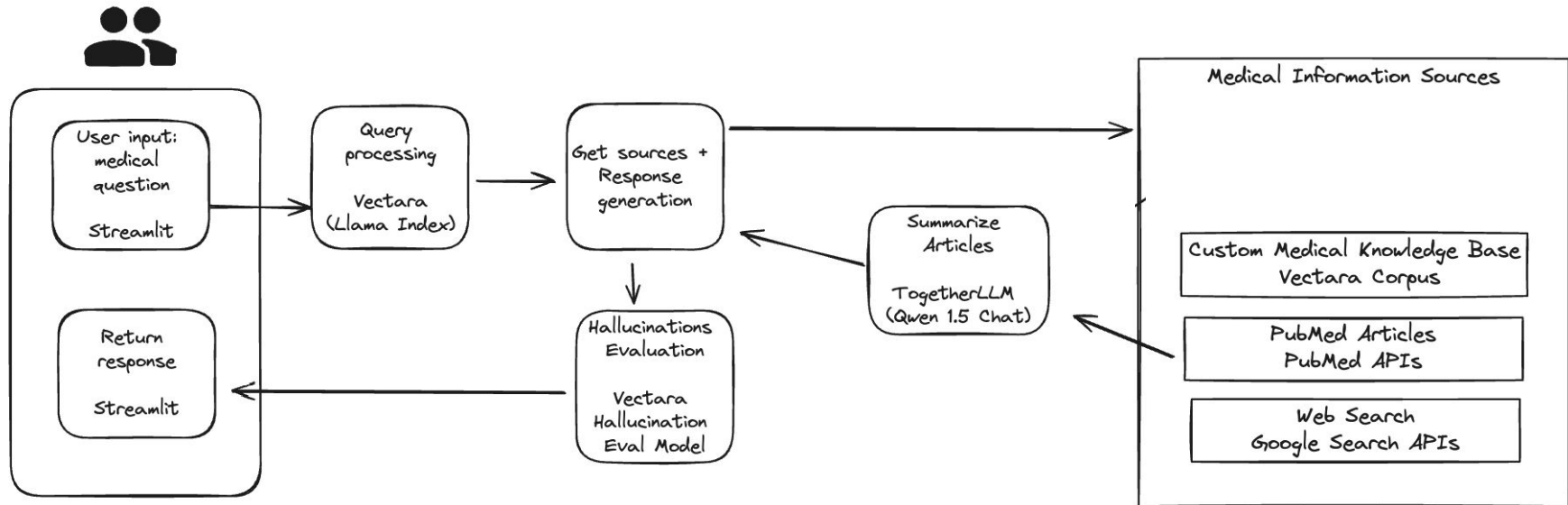


HOW DOES MEDMIND WORK? (2/2)

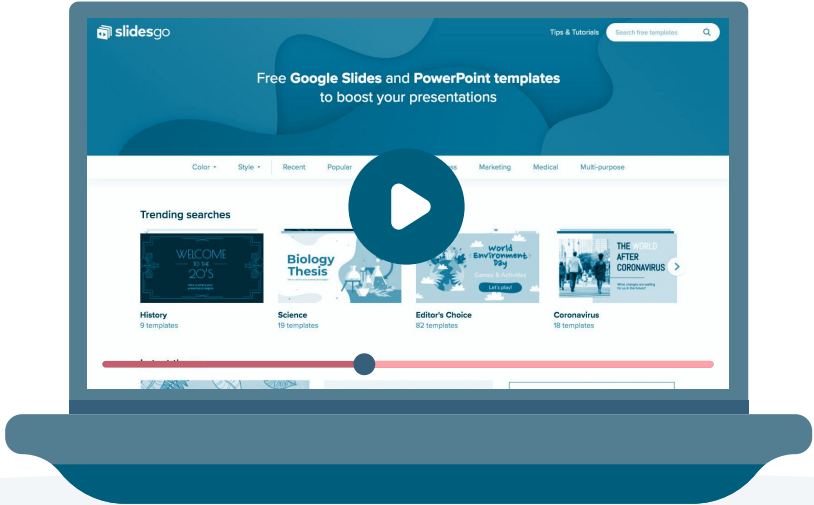
- 4. Response Generation:** A combination of medical knowledge base, PubMed articles, and web search results are synthesized into a coherent response.
- 5. Hallucination Evaluation:** MedMind evaluates the response to ensure accuracy and reliability before returning the result to the user.
- 6. Display Response:** The response is provided, along with relevant info sources.



HOW DOES MEDMIND WORK?



DEMO TIME!



CHALLENGES / PLANS FOR THE FUTURE

PERFORMANCE OPTIMIZATION

- App bootstrap
- Query processing + response generation

FEATURES

For ex. allowing to select the sources for search via the UI

UX/UI

Better discovery cues to the user using the feature.

THANKS

Do you have any questions?

You can reach us on LinkedIn or [GitHub](#)

- Jayash: [LinkedIn](#), [GitHub](#)
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CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon**, infographics & images by **Freepik** and illustrations by **Storyset**.



MEDMIND'S CODE AND CAPABILITIES

- **Medical Knowledge Base Integration (Vectara):** We use VectaraIndex to access and query a curated medical knowledge base from Vectara Corpus. This allows MedMind to provide answers to general medical questions and offer insights beyond simple factual responses.
- **PubMed Search and Summarization (Entrez & Together AI):** We use the Biopython Entrez library to search PubMed for relevant research articles and TogetherLLM to generate chat-based summaries of the research content. This makes complex scientific information more accessible and engaging for users.
- **Safe Web Search (Google Search API):** If both the results from Vectara Corpus medical knowledge base and PubMed APIs are not sufficient, we use Google Search API to retrieve relevant and safe web search results related to user queries. This expands the scope of information available to MedMind beyond the knowledge base and PubMed, ensuring comprehensive coverage of potential topics.
- **Hallucination Evaluation and Mitigation:** MedMind integrates the Vectara hallucination evaluation model to assess the likelihood of generated responses containing fabricated information. If the hallucination score exceeds a predefined threshold, the response is filtered or modified to indicate uncertainty or lack of confidence. This mechanism enhances the reliability and trustworthiness of MedMind's responses.

MEDMIND STRENGTHS

- **Comprehensive Approach:** MedMind combines Vectara's knowledge base with PubMed search and safe web search results, offering a well-rounded information source for medical inquiries.
- **Together AI Integration:** The use of TogetherLLM for chat-based summarization of PubMed articles demonstrates effective utilization of Together AI's capabilities, directly addressing the criteria for their special prize.
- **Hallucination Mitigation:** Employing the hallucination evaluation model showcases awareness of potential issues and a proactive approach to ensuring response accuracy.
- **User-Friendly Interface:** The Streamlit application provides an intuitive and accessible way for users to interact with the chatbot.
- **Impact and Innovation:** MedMind addresses a critical need for reliable medical information, potentially impacting a wide audience and demonstrating innovative use of RAG technology.