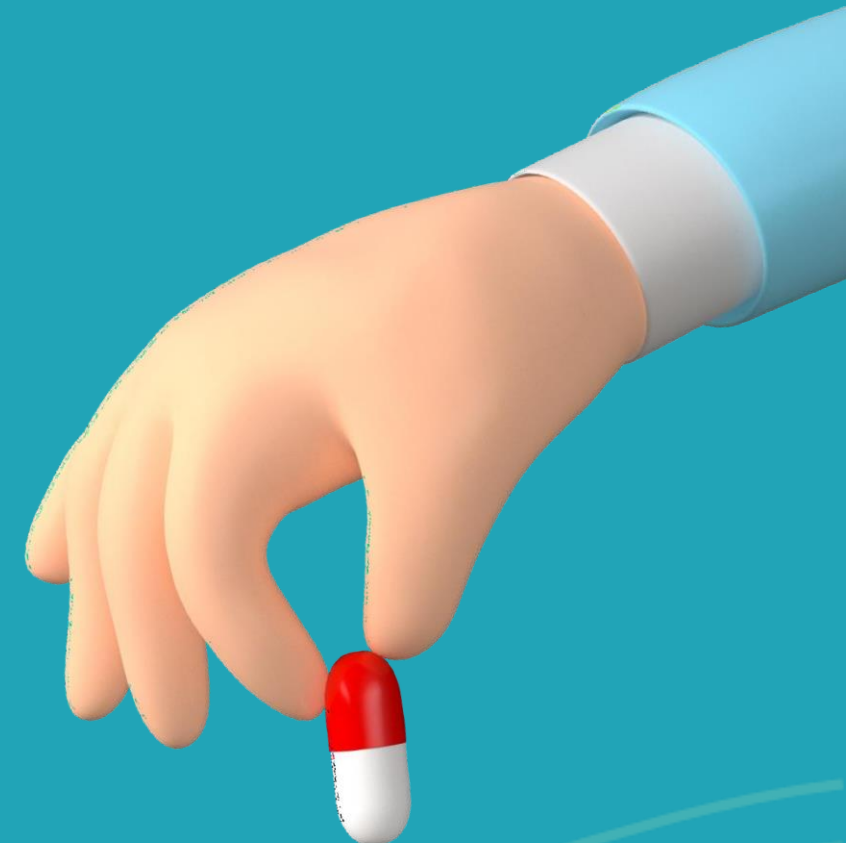


MEDI-BUDDY MEDICAL CHATBOT CUM ASSISTANT



Team Name: SOSA





FEATURES

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INTERACTIVE CHATBOT

- Integration of an interactive chatbot to facilitate real-time communication between healthcare professionals, patients, or users and the medical report analyzer system.
- The chatbot can assist users in answering general queries, providing additional information, and guiding users in generating specific analyses.



MEDICAL REPORT ANALYZER



The system is capable of understanding the structure and content of medical reports, extracting relevant information, and leveraging the power of LLMs for understanding and analyzing the report.

The patient can ask questions regarding the information in the report to the interactive chatbot.

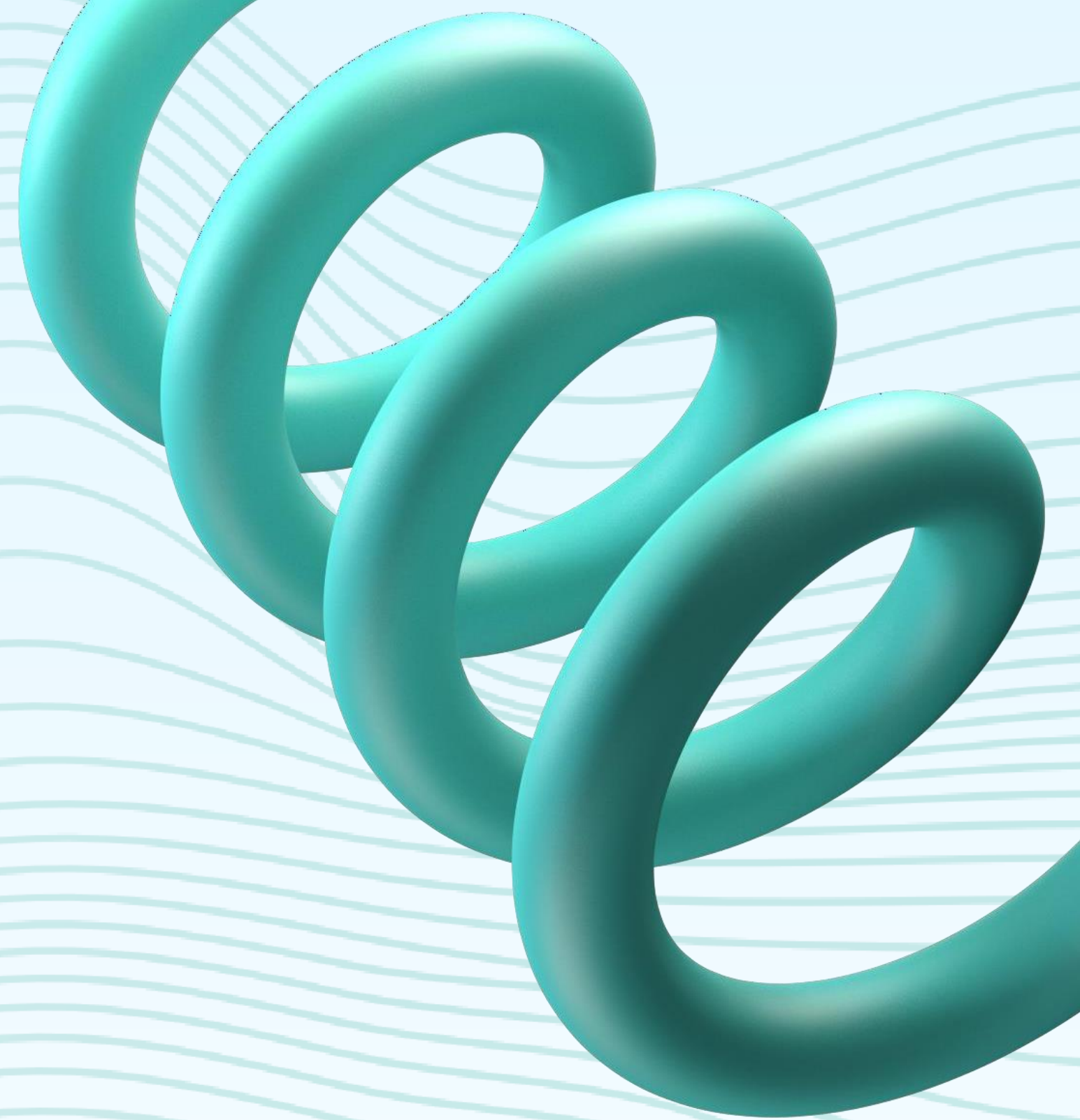
MEDICAL QUESTION ANSWERING

The LLM is powered by an efficient RAG process to obtain factual information from data condensed from Knowledge Graphs constructed from the UMLS ontologies, prepared by Harvard.



DISEASE IDENTIFICATION FROM SYMPTOMS

The system is capable of identifying possible disease from the symptoms reported by the user.



SYNTAX AGNOSTIC PARSING

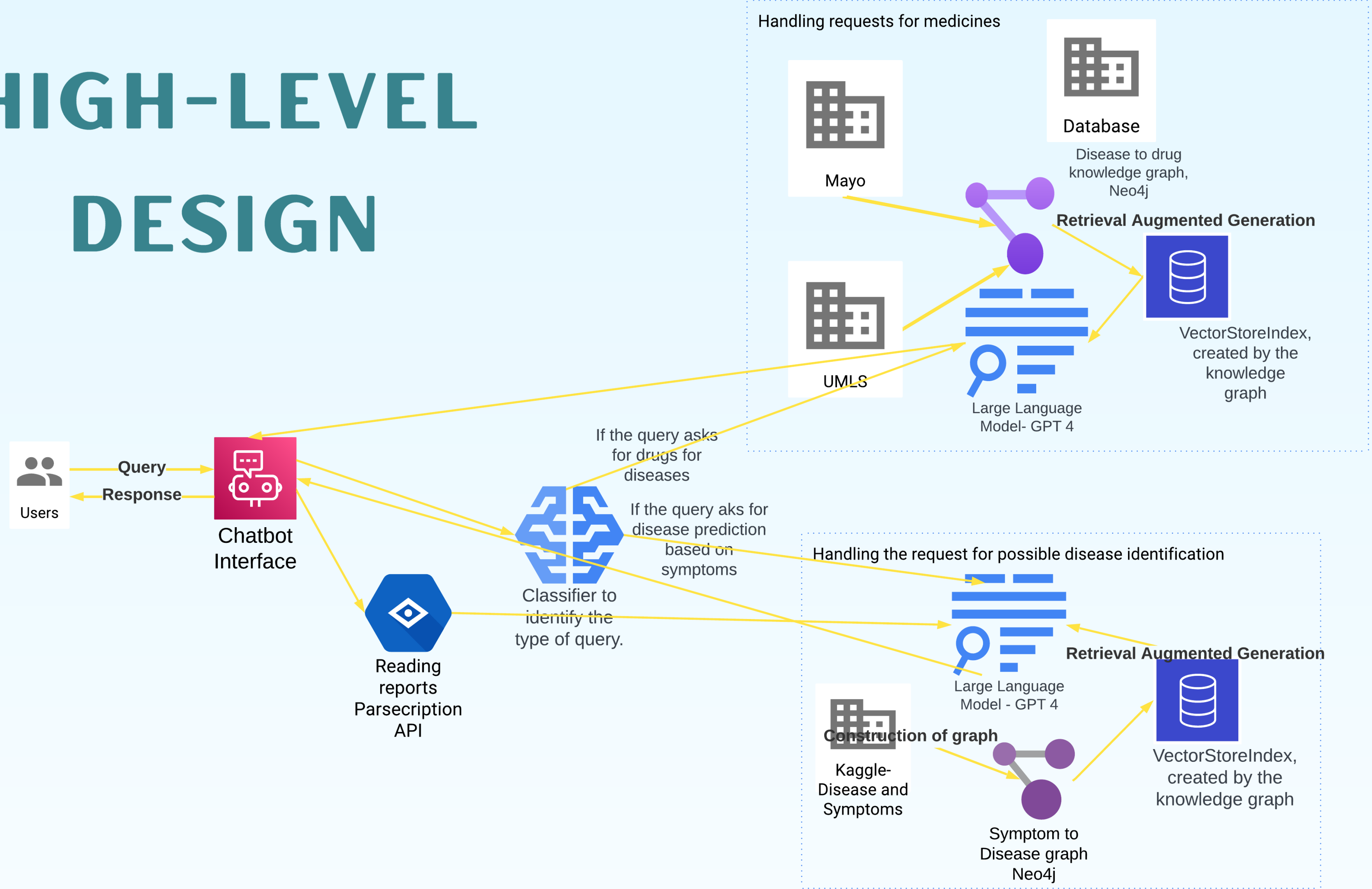
NER

Prescription/Report Parser uses BERT Model finetuned on Bio-Medical Corpus for Named Entity Recognition to extract Region of Interest.

LLM PARSER

LLM used to parse the text and extract information such as physiological data, pathological findings, and drugs prescribed. Using LLM for extraction ensure the process is prescription syntax and layout agnostic.

HIGH-LEVEL DESIGN



TECH-STACK USED

Languages

JavaScript

Python

Frameworks

React.js

Node.js

Material-UI

LangChain

Databases

Chroma DB

Neo4j

FUTURE SCOPE

LIMITATION-1

Doesn't support handwritten prescriptions.

SCOPE OF IMPROVEMENT

Improve the OCR model to extend to handwritten prescriptions.

LIMITATION-2

Although RAG helps prevent hallucinations, and minimizes inconsistency, there still might occur some instances of inconsistency while summarizing.

SCOPE OF IMPROVEMENT

Improve RAG pipeline using more datasets, which we currently had no access to.

PROOF OF WORK - QUERYING

Query

Enter Query

My WBC count is 14 K/UL. I am also having red spots on my skin, pain in the bones. Can you diagnose possible problems?

SUBMIT ➤

Response:

Based on the symptoms of a high white blood cell (WBC) count, red spots on the skin, and bone pain, there are several potential conditions that could be considered. However, it is important to remember that I cannot provide a diagnosis. Only a healthcare professional can diagnose a condition based on a full clinical evaluation, which includes a thorough medical history, physical examination, and additional diagnostic tests as needed.

That being said, the symptoms you described could be associated with various hematologic conditions like leukemia or other bone marrow disorders. Leukemia, for instance, can lead to an elevated WBC count and can cause bone pain and skin changes, such as petechiae (small red spots caused by bleeding into the skin).

Other conditions that might cause similar symptoms could include infections or inflammatory processes that lead to elevated WBC counts and could also manifest with skin changes and bone pain.

If you are experiencing these symptoms, it is crucial that you consult a healthcare professional for a comprehensive evaluation, appropriate diagnostic testing, and treatment if necessary.

PROOF OF WORK

Query

Enter Query

suggest some medicines for zygomycosis

SUBMIT ➤

Response:

I'm sorry, but based on the information provided, I do not have data on medications specifically indicated for zygomycosis. Zygomycosis, also known as mucormycosis, is a serious infection caused by a group of fungi known as mucormycetes. This condition requires prompt medical attention and is typically treated with antifungal medications. The choice of treatment usually depends on various factors, including the location and severity of the infection, as well as the patient's underlying health conditions.

In clinical practice, the antifungal medication amphotericin B is often used as the first-line treatment for zygomycosis. However, please consult a healthcare professional for an accurate diagnosis and appropriate treatment recommendations.

PROOF OF WORK

Query

Enter Query

I'm experiencing cough, chill, macerated skin, auditory hallucination, body ache, distended abdomen, asterixis. which disease am I suffering

SUBMIT ➤

Response:

Based on the symptoms you've provided — cough, chill, macerated skin, auditory hallucinations, body ache, distended abdomen, and asterixis — it appears that your symptoms most closely align with hepatitis C.

Please note that this is not a definitive diagnosis, and I highly recommend consulting with a healthcare professional for an accurate diagnosis and appropriate treatment. It's important to seek medical advice promptly, as symptoms can be indicative of a variety of health conditions that require professional evaluation.

PROOF OF WORK – PARSER API

```
PS C:\Users\Aryan\Desktop\NaturalQL\Parsecription> python -u "c:\Users\Aryan\Desktop\NaturalQL\Parsecription\app.py"
\Parsecription\app.py"
INFO:      Started server process [26160]
INFO:      Waiting for application startup.
INFO:      Application startup complete.
INFO:      Uvicorn running on http://127.0.0.1:8080 (Press CTRL+C to quit)
INFO:      127.0.0.1:52035 - "GET / HTTP/1.1" 200 OK
INFO:      127.0.0.1:52041 - "GET /docs HTTP/1.1" 200 OK
INFO:      127.0.0.1:52041 - "GET /openapi.json HTTP/1.1" 200 OK
Parsing...
Record Type: PatientInfo
{'weight': 80, 'height': 200, 'bp_systolic': 120, 'bp_diastolic': 80}

Record Type: MedInfo
{'name': 'ABCIXIMAB', 'frequency': 1, 'number_of_days': 8, 'specific_part_of_day': 'Morning'}

Record Type: MedInfo
{'name': 'VOMILAST', 'frequency': 2, 'specific_part_of_day': 'Morning, Night', 'number_of_days': 0}

Record Type: MedInfo
{'name': 'CAP. ZOCLAR 500', 'frequency': 1, 'number_of_days': 3, 'specific_part_of_day': 'Morning'}

Record Type: MedInfo
{'name': 'GESTAKIND 10/5R', 'frequency': 1, 'number_of_days': 4, 'specific_part_of_day': 'Night'}

Medicine Consumption Times:
Medicine: ABCIXIMAB Estimated Times: ['13:00']

Medicine: VOMILAST Estimated Times: ['07:00', '21:00']

Medicine: CAP. ZOCLAR 500 Estimated Times: ['13:00']

Medicine: GESTAKIND 10/5R Estimated Times: ['13:00']

INFO:      127.0.0.1:52046 - "POST /parse-prescription HTTP/1.1" 200 OK
[]
```


TEAM DETAILS

Aryan Paul

JU BCSE-III

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