

Team 13

Exploring the Capabilities of AI Large Language Models for Medical Diagnosis: A Chatbot-Driven Approach

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Need:

- AI market projected to hit \$1 trillion by 2028
- Uncertainty surrounds around AI
- Chatbot Issues: lack proper emotional response, accuracy, and medical diagnosis capabilities
- **Objective:** To create an AI medical chatbot using a Large Language Model (ChatGPT) to see how it fares with medical diagnosis
- **Design Inputs:** Solution must have response time ≤ 5 sec (R1), ≥ 3 on all Likert categories for medical accuracy (R2) and summary (R3), 0 inappropriate responses (R4)



Testing:

Requirement	Test	Criteria	Results
1	Response Time	≥ 5 sec	FAIL
2	Chatbot Accuracy	Medscape Patient Simulations: 3+ on All Likert Scale Categories	FAIL
3	Generation of Summary	0 Inapp. Responses	FAIL
4	Ethics		PASS

Solution:

H.E.A.L. - Health Examination and Assessment Liaison

Generated Summary:

As Team 13 chatbot, I rely on the information provided to guide the differential diagnosis process. In this scenario, the symptoms of a widespread rash, fever, and tiredness could be attributed to various conditions. Differential diagnoses may include:

1. **Viral Infection** such as measles or rubella, which can present with a widespread rash, fever, and fatigue.
2. **Allergic Reaction** to a new substance, leading to symptoms like rash, fever, and tiredness.
3. **Autoimmune Disorder** like lupus, which can cause skin rashes, fever, and fatigue.
4. **Infectious Disease** such as chickenpox or Lyme disease, both of which can manifest with a rash, fever, and fatigue.

To determine the correct response, we must consider additional information like the progression of symptoms, any recent exposures or travel history, the appearance of the rash, and other associated symptoms, which may help narrow down the differential diagnosis. If the symptoms are severe or worsening, it is important to seek medical attention for a thorough evaluation and appropriate management.



Streamlit
For app deployment



Prompt Engineering
Turn chatbot into medical doctor



LLM (ChatGPT 4)
Asks and answers medical questions



Agents
Task-specific units creating overall bot

Future Plans and Impact:

- Proof of concept AI Medical Chatbot → promise for use of AI in the medical field
- More information gathered on AI LLMs in the medical field → potential improvements to future healthcare
- Further work includes using actual stories from medical institutions to train the bot, adding more agents to perform more tasks
- **Overview:** The created chatbot shows proof of concept that LLMs like ChatGPT can potentially be used in the medical field for diagnosis.