

# Artificial Intelligence Healthcare Chatbot System

Muse Mohamud Mohamed<sup>1</sup>, Professor Wang Zhuopeng<sup>2</sup>

College of Electronic Communication and Physics, Shandong University of Science and Technology, China<sup>1,2</sup>

**Abstract:** To lead a better life healthcare is extremely much important. But it's very difficult to get the consultation with the doctor just in case of any health issues. The proposed idea is to make a medical chatbot using Artificial Intelligence which will diagnose the disease and supply basic details about the disease before consulting a doctor. To reduce the healthcare costs and improve accessibility to medical knowledge the medical chatbot is made. Certain chatbots acts as a medical reference books, which helps the patient know more about their disease and helps to enhance their health. The user can achieve the real advantage of a chatbot only if it can diagnose all quite disease and supply necessary information. A text-to-text diagnosis bot engages patients in conversation about their medical issues and provides a personalized diagnosis supported their symptoms. Hence, people will have a thought about their health and have the correct protection.

**Keywords:** Artificial Intelligence, Prediction, Pattern matching, Disease, Query processing

## I. INTRODUCTION

Artificial intelligence is now at its peak and chatbot is just one example of its use to contribute to progress. It should also be made clear that chatbots are not designed to diagnose patients. The idea presented was to use artificial intelligence to create a medical chatbot that could provide some basic details about the disease before consulting a doctor [1].

Text-to-text medical chatbots enable patients to talk about their medical problems and provide personalized diagnosis based on symptoms. The patient can then be transferred to a specialist. This sequence of things fundamentally saves the doctor's time. In turn, chatbots are always available to help people in need of medical assistance [2]. In addition, the virtual assistant may be responsible for reminding users to take medication and monitoring the patient's health status.

Generally, chatbots communicate with real people. Chatbots are used in applications such as e-commerce customer service, call centers and internet games. However, with a chatbot, one can communicate with a text or voice interface and get responses through artificial intelligence [3]

Chatbots are programs designed to automatically involve with received messages. The chatbot can be programmed to respond same way to respond differently to messages containing certain keywords every time and even use machine learning to adapt its response to suit the situation [1-2]. Moreover, numerous hospitals, nursing homes, and even private centers are currently using online chatbots to provide human services on their sites. These chatbots connect with potential patients who visit the site, help them find experts, schedule appointments, and get them the right treatment.

Regardless, in industries where people's lives may be questioned, the use of artificial intelligence is still beginning to raise doubts. It raised questions as to whether the above tasks should be assigned to personnel. This medical Chatbot system will help hospitals provide 24 x 7 online healthcare support online, and it can answer deep as well as general questions [4]. It also helps generate leads and automatically pass information about leads to sales by asking questions continuously, and also can guide the patient's exact needs and help the patient to look for what she/he wants.

Chatbot usage is user friendly and can be used by anyone. However, medical chatbots can provide personalized diagnosis based on symptoms. In the future, by adding support for more medical functions such as location, duration, intensity of symptoms, and more detailed description of symptoms, the chatbot's symptom recognition and diagnostic performance can be greatly improved [2-3]

The future is the era of messaging applications, because people will spend more time on messaging app than any other apps. Therefore, medical chatbots have a broad and broad future and no matter how far people are, they can have this medical conversation. By adding more word combinations and increasing the use of databases, the efficiency of chatbots can be improved, so that medical chatbots can handle all types of diseases. The proposed system will engage patients into a conversational text agent that helps the patients with their health issues. and patients can chat as if they are chatting with a human. The patients then issue the chatbot their manifestation to diagnose the disease. It gives different recommendations about the different manifestations to clarify the disease. When the right disease is found, it recommends the patients the cure and the doctor who needs to be consulted in case of major disease.

## II. LITERATURE REVIEW

Saurav Kumar Mishra points that Chatbot will act as a virtual doctor and makes possible for the patient to interact with virtual doctor. Natural language processing and pattern matching algorithm for development of this chatbot system. It is developed using the python Language. Based on the survey given it is found that the number of correct answer given by

the chatbot is 80% and incorrect/ambiguous answer given is 20%. From this survey of chatbot and examination of result proposed that this software can be used for teaching and as a virtual doctor for recognition and main healthcare [5]. Chat-bots are usually used to engage conversation between both human and machine. The user feeds some knowledge to the machine so that machine can identify the sentences and taking a decision itself as a response to answer a question. It can neglect in describing a sentence and how to the response it whereas linking chat request to the database. So knowledge demonstration and function of SQL in the pattern-matching operation are needed. The deliberation by the chat-bots would be verified back to the fundamental model. It is done so that it can add some knowledge to the database as it has not been formed before. If in case the input sentences in the database did not match then it will be reformed [6]. So far, chat-bots is been applied in health education, diagnostics and mental health. A survey of conversational agents from 40 articles outlines chat-bot taxonomy, specifies the main challenges and defines the types and contexts related to chat-bots in health [7]. For instance, chat-bots can provide instant responses to health-related enquiries from patients while looking for specific patterns of symptoms in predicting disease, as presented by the internet-based Doc-Bot delivered via mobile phone or a Messenger-based chat-bot for outpatient and translational medicine [8]. Chat-bots, as part of Artificial Intelligence devices, are natural language processing systems acting as a virtual conversational agent impersonate human interactions.[9] While this technology is still in its developmental stage, health chat-bots could potentially increase access to healthcare, improve doctor–patient and clinic–patient communication, or help to manage the increasing demand for health services such as via remote testing, medication adherence observing or teleconsultations.[10–12] The chat-bot technology enables for such activities as specific health surveys, setting up personal health-related reminders, communication with clinical teams, booking appointments, retrieving and examine health data or the translation of diagnostic patterns taking into account performance indicators such as physical activity, sleep or nutrition.

### III. PROPOSED SYSTEM

In the proposed system the user dialogue is a lineal design that return from symptom extraction, to symptom mapping, where it identifies the corresponding symptom, then diagnosis the patient whether it's a major or minor illness and if it's a major one a suitable doctor will be referred to the patient, the doctor details will be extracted from the database, the user will be identified by the login details which is stored in the database.

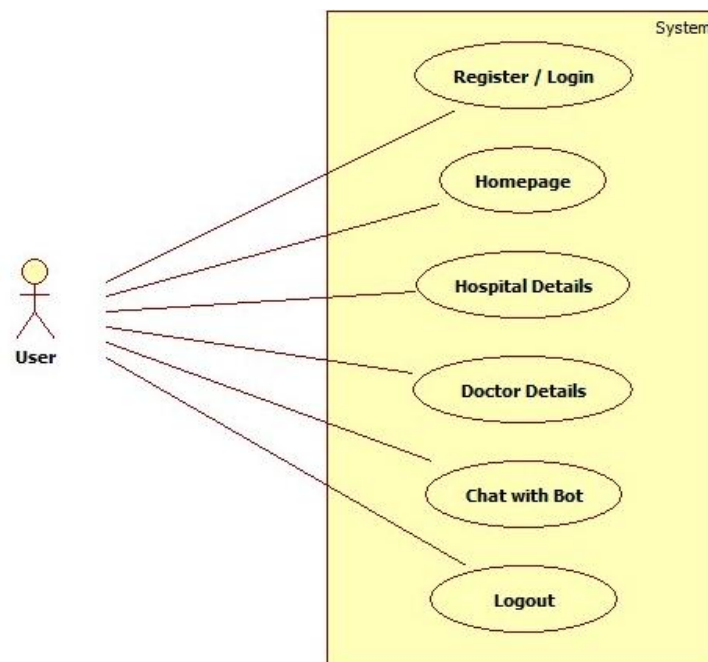


Fig1: Use Case Diagram of User

In fig1, Chatbot's dialogue design is represented using case diagram of user in order to reach the correct diagnosis, the logic for state transitions are made, natural language generation templates were used, and system initiative to the user and get responses from the user. Except its greetings and goodbye states, our agent has three main conversational phases: acquisition of basic information, symptom extraction, and diagnosis. Our bot starts off by asking for the user's email and password for login and then enters a loop of symptom extraction states until it acquires sufficient information for a diagnosis. Users have the choice of entering the loop again to talk to the doctor about another set of symptoms after be given their first diagnosis and the other choice is that the user can read their history of chats about what they have discussed.

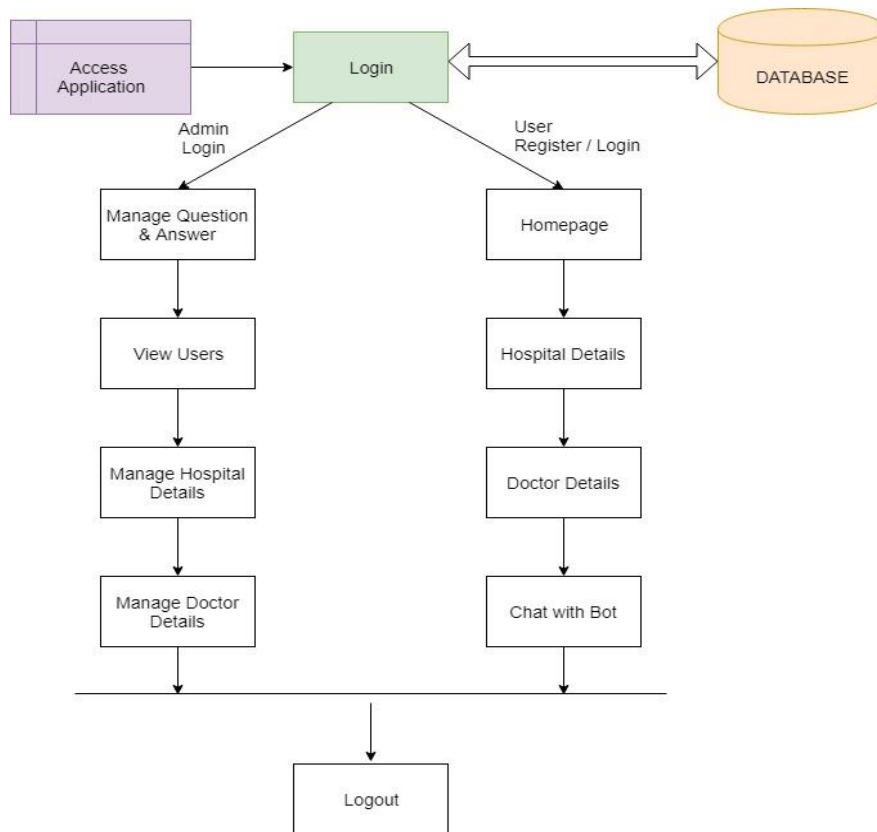


Fig. 2: System Architecture

The above Figure proceeds with the user login where the users' details will be saved in the database. Then the user can start their conversation with the chatbot and it will be saved in the database for future reference. The chatbot will clarify the user symptoms with serious of queries and also the symptom conformation will be done. The disease will be classified as minor and major disease. Chatbot will reply if it's a major or minor disease. If it's a major one user will be recommended with the doctor details for further treatment.

### IV. RESULT AND DISCUSSIONS

This project result is as follows, the user will have to be in a text to text communication with the chatbot and get the particular disease and users can also get their previous chat history through their details which are stored in the database.

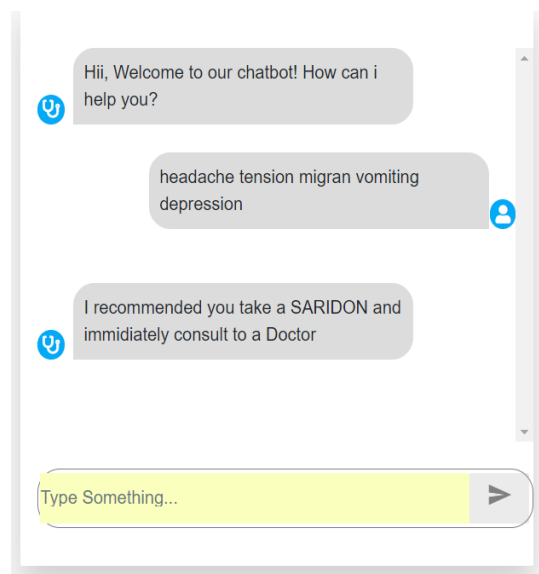


Fig 3: Result Prediction

The above figure shows how the user text with the chatbot and the accurate result will be shown to the user at the end of symptom clarification. and the user have been consulted to a doctor.

## V. CONCLUSION AND FUTURE SCOPE

From the review of different journals, it is concluded that, the usage of Chatbot is user friendly and can be used by anyone who knows how to type in their own language in mobile app or desktop version. A medical chatbot provides personalized diagnoses based on symptoms. In the future, the bot's symptom recognition and diagnosis performance could be much improved by adding support for more medical features, for instance location, duration, and intensity of symptoms, and more detailed symptom description. The implementation of customized Medical assistant heavily relies on AI algorithms as well as the training data. At the end, the implementation of customized medicine would successfully save many lives and create a medical awareness among people. As mentioned before, the future era is the era of messaging app because people going to spend more time in messaging app than any other apps. Therefore, medical chatbot has huge and large future scope. No matter how far they are, people can have this medical conversation. The only requirement they would need is a simple desktop or smartphone with internet connection. The efficient of the chatbot can be improved by adding more combination of words and increasing the use of database so that of the medical chatbot could handle all type of diseases. Even voice conversation can be added in the system to make it easier to use.

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