



**MEDICAL ASSISTANCE USING TEXT BASED
HEALTHCARE CHATBOT**

Dr. V Keerthika¹, Aditya Bhardwaj², Alok Kumar Choudhary³, Aruna V Ajit⁴, Aastik Anand⁵

¹Assoc. Professor, Department of CSE, DSATM

^{2,3,4,5} Final year students, Department of CSE, DSATM

Abstract - Most of the times people are unaware of the treatments and symptoms of the particular disease. Even for the minor medical problems users have to depend on hospital which can be excessive memory and time consuming. The proposed idea is the creation of a medical chatbot using Artificial Intelligence, Machine Learning and Natural Language Processing which can act as a medical support system with a goal of providing useful recommendations concerning several disease prevention pathways before consulting a doctor. This medical chatbot can help you with information regarding a medicine's availability, its dosage and also the symptoms all according to the person's age. This bot will help you to cure fever, cold, cough, migraine including many other minor ailments and doctor recommendations for addresses chronic diseases. By using Machine Learning this chatbot can train itself to cure other diseases. People can keep track of their health conditions and take preventive measures and treat them on requirement.

Keywords--Artificial Intelligence, Machine Learning, Natural Language Processing, Chatbot, Prediction, Disease, Query Processing

1. INTRODUCTION

The recent advancements in technologies like machine learning and artificial intelligence have completely changed the healthcare system giving rise to online healthcare solutions, which promises to transform the entire healthcare system by making it more efficient, inexpensive and of better quality. In the context of Healthcare Chatbot, numerous flows have generated and will continue to produce a huge amount of information showing Machine Learning features from several sources such as electronic medical records (EMR) systems, mobilized health records (MHR), personal health records (PHR), mobile health care monitors, genetic sequencing and predictive analytics as well as a large number of medical



sensors and devices. One of the most interesting challenges for modern healthcare applications is to provide intelligent recommendation systems, which leverages different kinds of data and related knowledge available and is able to support people in making decisions in a large variety of scenarios, for example, patients that might be unwilling for a prevention visit. The healthcare chatbot tackles this problem by giving the patient a chance to interact with the healthcare chatbot at the get professional level medical advice in the comfort of his/her home.

While the new data processing and analysis technologies have supported the diffusion of the healthcare chatbot model, they have given rise to the new patient trust problem, referring to the feeling of interaction with a non-human entity when it comes to filling forms or answering a given series of questions by using a pre-defined set of answers. It can be noted that this issue might make the patient more irritated since they are not able to freely express and communicate their symptoms, worries and past records, as when they interact with a human physician. Such problems are pushing researchers to explore and define new knowledge representation models and interaction models to fulfill the rising need for a more suitable form of human-machine interaction.

As a possible solution to this issue, we propose the chat-like conversation model, an internet-based communication model that lays its foundations in the social networking era. Healthcare can benefit from this model since it strongly requires a human-like interaction schema. A chatbot (also known as a talkbot or a chatterbot) is an artificial entity that is able to autonomously hold a conversation via message exchange. This works using machine learning and deep learning, nowadays chatbots can be very reliable and are able to provide automatic and adaptive human-like conversation behavior, thus our because of a healthcare chatbot the patients can freely express their symptoms and get good online medical assistance.

2. LITERATURE SURVEY

The Chatbot study reviews medical chatbot for highly accurate analysis of disease using machine learning and artificial intelligence.



Paper [1] describes the development of the medical chatbot that uses Natural Language Processing such that a computer can communicate with the patient in their terms. This chatbot takes personal queries related to health from the person, without being physically available in the hospital. This chatbot uses Google API for voice-text and text-voice conversion. Queries are sent to the chatbot and it provides the related suggestions and treatment of the disease, the person might be suffering from and displays on the android app. The person can freely ask medical dosage related queries by voice.

Paper [2] Chatbot act as a virtual doctor and makes easier for patients to interact with virtual doctor. Natural language processing and pattern matching algorithm are used for the development of this chatbot. Python language is being used for the development. From the survey it was found that 80% of answers given by the chatbot are correct but remaining 20% are ambiguous answers .From the survey of this chatbot it was found that it can be used as a virtual doctor for awareness and primary care.

Paper [3] describes the development of the chatbot using Artificial Intelligence that can diagnose the diseases based on the symptoms and provide with a list of treatments if the person is diagnosed with any disease. In this chatbot it is possible to detect any possible problem before it causes severe medical conditions. This system also provides the composition of the medicines and their prescribed uses. From the survey it was found that this chatbot is in its early stage of development and faces some challenges. Research and implementation costs are the severe problems and govt regulations are also challenges existing which can be crucial in the successful implementation of a personalized medication system, but are not addressed by the algorithms discussed in this paper.

Paper [4] suggests Bot Assistants for Patient Care as it can be an efficient and low-cost solution .It proposes a new Conditional Entropy Retrieval Based model and also an Attitude Modeling based on Popitz Powers. Natural language processing is a field of computer science, artificial intelligence, and computational linguistics concerned with the interactions between computers and human, natural languages. Deep Learning on Natural Language



Processing, with Deep Mind one of the most widely known, currently belonging to Google Deep Mind and Microsoft's Zo Chatbot are the latest trends applied. The algorithm successfully retrieves the suitable answer with a high success rate in the patient-Bot Assistant dialogue interaction. The results show that even in small training datasets, this method outperforms up to date methods for automated communication. The issue here is, it requires a compact Adjacency Matrix based on the dialogues.

Paper [5] the idea is to create a chatbot that improves medical knowledge and initially reduces the medical healthcare cost. This helps the patient know more about his disease. Better efficiency can be obtained by having more data and increasing the use of database, so that the chatbot can handle more number of diseases. To make the use of chatbot easier, a voice based conversation system could also be added.

Paper [6] the aim here was to introduce HOLMeS (Health On-Line Medical Suggestions), which improves ehealth pattern by providing a medical context of human interaction. Here different information from the patient is gathered about the disease or about the symptoms which he can observe, after gathering these information, this system helps patients in choosing the most appropriate disease prevention pathway. It starts by asking general questions and ends up in specific pathway questions before suggesting any advice or medication to the patient. The main goal here is to provide useful recommendations in order to prevent several diseases.

Paper [7] proposed an idea to design a chatbot to be used within mental health counselling. The demo chatbot was created to provide an interactive way of leading the person into the PDF worksheets, and asking them in which areas they would like to receive information on. .Emoji's were used for the implementation of the method. By incorporating mental health screening tools into a chatbot interface, the person can have a more interactive and user-friendly experience .After the survey, we found that this chatbot provides the only 60% accuracy. The main issue is to maintain the ethical considerations.



Paper [8] Proposed idea of an artificially intelligent chatbot that can help you with the right medicine, dosage, and usage of medicines. This medical chatbot can help you with information regarding a medicine's availability, its dosage and also the symptoms all according to one's age. This bot will help you to cure basic fever, cold, cough, and headaches. As almost 80% of the people are equipped with high-end smartphones this is a foolproof way to ensure medical aid to the users. Designed in such a way that helps a user at any time and at any place with their basic medical needs. Dedicated System which is able to help the user get to know what the possible causes and effects of their particular symptoms are and then determine the illness and take appropriate actions.

Paper [9], created a text to text chatbot which communicates with the patient using Natural Language Understanding technique to provide more patient specific suggestions using general health dataset and based on the various symptoms that the patient has. Its domain has been further increased as a diabetes chatbot for specialized Diabetes prediction using Pima Indian Diabetes dataset. It has mediocre accuracy for general health prediction but the accuracy is one of the highest in diabetes prediction which provides the further scope of improvement in this domain.

Paper [10] The main aim of this paper was to present a design for a medical health chatbot that provides diagnosis and remedies based on symptoms provided to the system. The system will check if the disease is serious or not, if found serious it will connect the person to the doctor available online. It would also give them the freedom to consult a doctor 24/7 and also can get a real doctor's advice if needed. This can be a most popular tool for people with busy schedule as they won't have to hamper their schedule to consult a doctor for minor health queries. This would also be a tool with high utility among elderly and physically disabled people as this can help them get solutions to all their health related issue at their fingertips.

3. RESULTS

The Project results are as follows .The user can communicate with the chatbot and get the accurate results at the end of symptom clarification. Medication will also be provided to the user on the basis of the disease and their age. Moreover, the chatbot will also suggest the user to consult the doctor at the earliest if the user is suffering from the severe diseases. This chatbot can be of great use who are unable to step out and go to doctors.

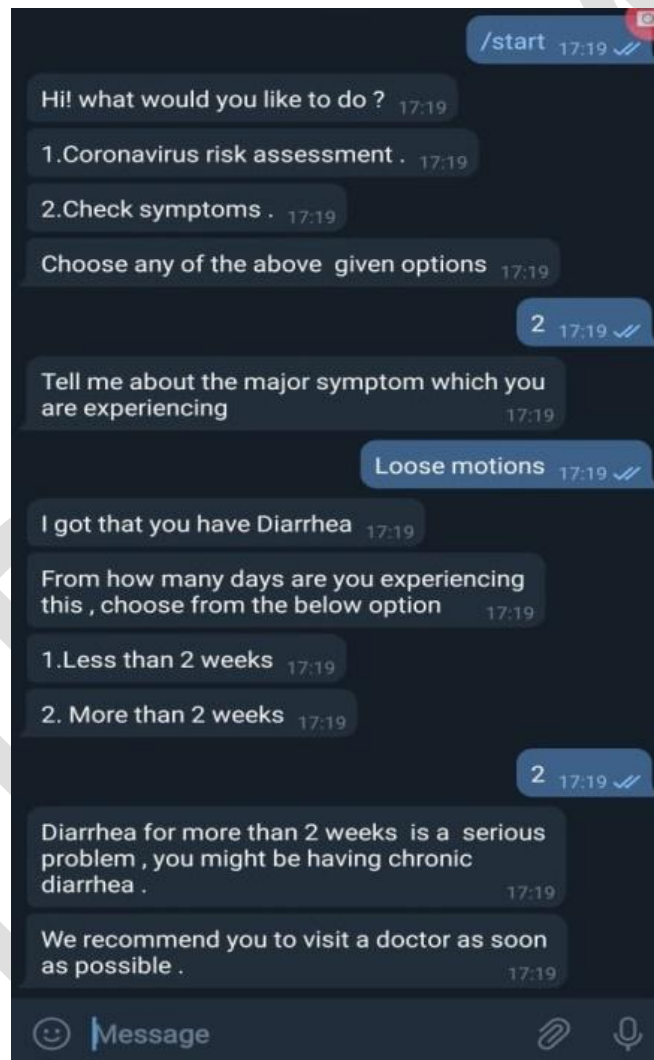


Figure1: User Communicate Chatbot

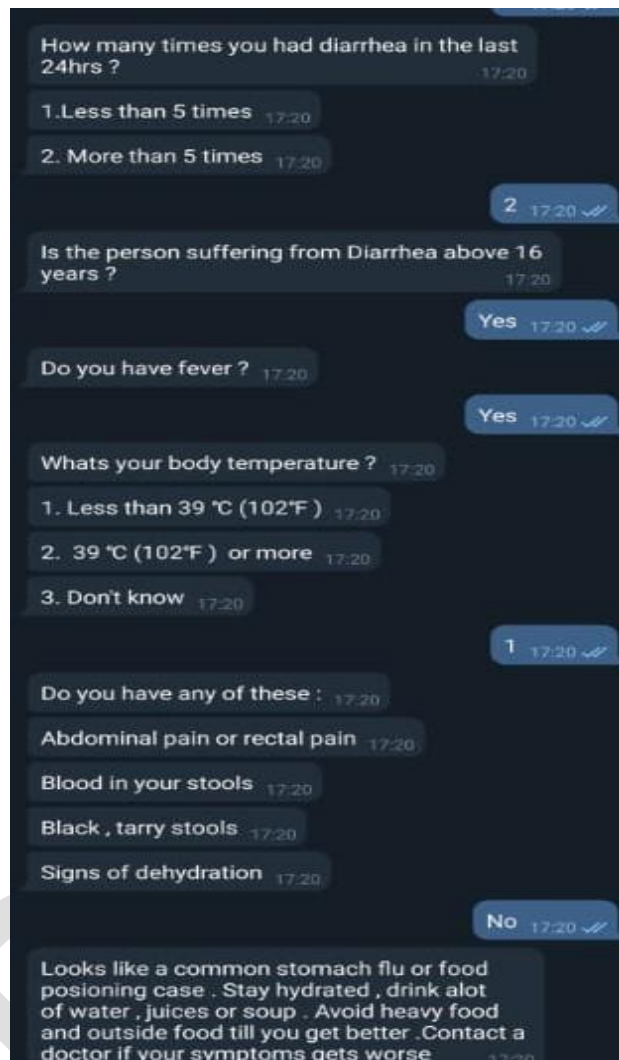


Figure 2: User Getting Reply

4. CONCLUSION

From the review of various journals, it is concluded that the usage of Chatbot is user-friendly and can be used by any person 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 greatly improved by adding support for more medical features, such as location, duration, and intensity of symptoms, and more detailed symptom description. Future scope of this chatbot is very vast as researchers already mentioned that future era is messaging app, it means people are going to spend more time on the messaging app than others. So by using Chatbot, it does not matter how far a person is, the only thing that is required is a simple desktop,

tablet, and smart mobile, etc. The smartness and intelligence of the chatbot can be increased by conducting more study and increasing the database so that Chabot could answer all types of question about every type of disease.

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