

Healthcare Chatbot

Deepshika Gopalkrishnan Pillai

S. R. Nalamwar

Assistant Professor, Computer

Engineering, AISSMS COE SPPU

Artificial Intelligence and Data Science

AISSMS College of Engineering

Pune, India

deepshika.pillai@gmail.com

Abstract - As we all know that in today's world we are facing newly diseases in which it has become very difficult to identify the diseases and its symptoms. The various diseases that are rising are diabetes hypertension cholesterol imbalance obesity, fever, cold, cough and many more [3]. People are seeking medical advises around the world looking forward to lower the risk of diseases [1]. A medical chatbot can be of a great help that can stimulate conversation with users as a medical assistant [7]. So this chatbot can give filtered information of all the sources [13]. This chatbot can help users to keep track of health status and health hazards [15]. As the AI keeps growing various technologies are introduced in the market, one such technology is virtual chatbots [20]. When a person feels sick they usually visit the family doctor or a clinic nearby but this chatbot will be able to deal with the patients in a better way and reduce the efforts through medical assistant [2]. They can be used for either predictive diagnosis or for information [4]. This medical chatbot can also help in reducing the psychological stress caused amongst humans [7]. The main purpose of the chatbot will be to collect patient symptoms and offer a potential diagnosis and consultation based on their response [9]. So this chatbot will recognize and evaluate voice commands and perform activities [16]. Medical assistance use NLP to create a chatbot which provides medical and health related information [21][22]. There are various challenges that the chatbots undergo that is it requires a detailed understanding and research related to this domain [20]. These medical assistant chatbots has a major role in healthcare industry for providing predictive diagnosis [18]. This project focuses on accurate and immediate prediction of disease based on symptoms with general idea of this project is to provide basic details about the disease or infection before consulting a doctor so that it may reduce the cost and improve the medical knowledge through medical assistant [17].

Key Words: Chatbots, Health, Medical, AI/ML

1.INTRODUCTION

Recently there has been a lot of evolution of technology, one major is in healthcare industry, the chatbot has been great growth. The introduction of medical chatbots represents how medical and hospital information can be trained such that users can use it [9]. These chatbots give meaningful information by using artificial intelligence, machine learning, and Natural Language processing [7]. This provides information about disease prediction, mental health and various medications. This survey will find the disadvantage of existing system and provide effective outcomes [15]. The medical chatbots has become important instrument between the patient and healthcare system. These may create a personalized patient-center care that will be helpful for the patients [18]. The tasks can be performed through voice commands as well as texted commands [19]. This may improve the doctor patient communication and can reduce the expense as well as the mental stress caused the risk of disease [11]. The chatbots continuously require training and testing to fit to the parameters for efficient functioning. Nowadays people are prone to various diseases due to not much awareness of the disease [16]. This chatbot can be useful in predicting those diseases and reducing mental stress and trauma when they are not sure of the disease [12]. This chatbots can be installed in any device for example Android phone, Apple phones, Windows, Web browsers etc. This system provides support in healthcare domain to identify the disease when it is not clear or the doctors are not available [13].

2. Problem statement

As we all know in this current world the number of diseases are increasing rapidly due to that the doctors are shorthanded and patients also don't have that much time in their busy life because of the increased workload of today's world. The major problem in this is that human life is very precious and if something small might happen to a person then he/she panics into thinking that it could be a major disease or something of that sort and in turn the mental health of that person is disturbed and he catches serious symptoms, the studies have shown that a person mental health contribute to a great amount in recovering health. So if the health is not taken seriously then the mental health impacts and it gives rise to severe cases as we all saw recently during covid times that

person would get mentally disturbed and it caused their body to not recover properly and lost their lives. Another issue is that due to increased diseases the doctors are less and patients are more as when climate changes we can see that the clinics and hospitals are full of patients and due to that many does not get chance to get appointment with doctors as the doctor does not have time or the person might not be able to take extra time off from their busy schedule.

3.CHATBOT BACKGROUND

As we all know in this current world the number of diseases are increasing rapidly due to that the doctors are shorthanded and patients also don't have that much time in their busy life because of the increased workload of today's world. The major problem in this is that human life is very precious and if something small might happen to a person then he/she panics into thinking that it could be a major disease or something of that sort and in turn the mental health of that person is disturbed and he catches serious symptoms, the studies have shown that a person mental health contribute to a great amount in recovering health. So if the health is not taken seriously then the mental health impacts and it gives rise to severe cases as we all saw recently during covid times that person would get mentally disturbed and it caused their body to not recover properly and lost their lives. Another issue is that due to increased diseases the doctors are less and patients are more as when climate changes we can see that the clinics and hospitals are full of patients and due to that many does not get chance to get appointment with doctors as the doctor does not have time or the person might not be able to take extra time off from their busy schedule.

4.BENEFITS OF HEALTHCARE CHATBOTS

Healthcare chatbots bring about a transformative shift in the healthcare landscape, offering a myriad of benefits that enhance accessibility, efficiency, and overall patient experience. Their 24/7 availability ensures that individuals can access information, schedule appointments, and receive guidance at any time, addressing the need for immediate assistance [6]. Instant information retrieval capabilities empower users with timely and accurate medical insights, contributing to increased health literacy. The streamlined appointment scheduling and reminder functionalities not only simplify administrative processes but also help manage appointments more effectively. For individuals with chronic conditions, healthcare chatbots enable remote monitoring, providing personalized recommendations and reminders, thereby improving disease management [4].

Furthermore, healthcare chatbots play a pivotal role in health education and promotion by disseminating information on preventive measures and healthy lifestyle choices. Their capacity to engage users in personalized conversations fosters a sense of empowerment and encourages individuals to take an active role in managing their health [11]. This educational

aspect contributes not only to individual well-being but also to broader public health initiatives.

5.LITERATURE REVIEW

Chatbots in healthcare has gained great attention in recent years. There was traditionally menu based interaction but now it is done using Natural Language Processing(NLP) with deep learning [1]. These chatbots help in monitoring stress, mental health and improve patient's outcome. These are optimized systems and manages the overall healthcare, that provides information to users about healthcare also medical reminders [6]. The chatbots are used to reduce the expense as they provide suggestions to their health on their remote devices [17]. These chatbots help in reduce the load of traditional healthcare systems. Artificial Intelligence and Natural Language Processing (NLP) helps to process users queries and perform human interaction. Medical chatbots are tools used to help in developing patients overall experience [5]. They offer symptoms checking, health information, medical information by using NLP and AI [11]. He main goal of medical assistant is instant healthcare support. They provide patients with immediate medical concerns at any given time and place [19]. These medical chatbots reduce the stress in the existing traditional medical healthcare system [21]. These systems are used to provide the patients with personalized solutions for their variety of medical solutions. They play an important role in places where there are no proper healthcare facilities like in remote areas [14]. These chatbots are designed to provide timely and accurate results. They are available for 24*7 overall patient as the technology is beginning to evolve with demand for patient centric healthcare growth. The healthcare chatbot technology will evolve much further that when the patient is in serious condition or emergency situations then only they have to visit to the hospital [3].

6.METHODOLOGIES

The methodology employed for this literature review on medical chatbot operations involved a methodical and comprehensive approach to explore the evolving geography of exploration in the crossroad of healthcare and artificial intelligence [16]. Our exploration questions centered on understanding the effectiveness, impact, and challenges associated with medical chatbots, with a focus on specific healthcare disciplines. Keyword quests were conducted across estimable academic databases, including PubMed, IEEE Xplore, ScienceDirect, and Google Scholar, exercising terms similar as " health chatbots" and variations specific to medical operations. Addition and rejection criteria were strictly defined to sludge papers grounded on applicability, study design, and publication date [18]. Following the reclamation of material literature, a scrupulous webbing process was accepted, involving the examination of titles, objectifications, and full textbooks to insure alignment with the defined criteria. Data birth encompassed crucial details similar as study objects, methodologies, findings, and limitations. The conflation of findings involved a thematic association to discern patterns, common themes, and areas of agreement or divergence across studies [14]. Quality assessments were

conducted to estimate the robustness of included studies, contributing to a critical analysis of the being literature. The attendant literature review provides a comprehensive overview of the current state of medical chatbot operations, offering perceptivity into their effectiveness and areas warranting farther exploration.

Our approach for conducting this literature check study consists of two stages. Each stage involves several conditioning. In the first stage, we identify applicable hunt terms to literature work on the content, and also we identify applicable databases of exploration papers. also, we collect exploration papers on chatbots from the named databases. These conditioning are concentrated on information gathering about the content. The alternate stage of our study involves the analysis of the recaptured papers [9]. We concentrate on classifying the papers to different groups grounded on four aspects of chatbots design, perpetration, operation and evaluation styles reported in the literature. In the following subsections, we give details of those conditioning.

3. CONCLUSIONS

Chatbots are offering a broader system to a patient as they will be using the application whenever needed. It contributes to remote medical consultations while being at their places or at their own free time. The exploring has been done of symptoms checking as it will help reduce the mental stress of the patient when they are panicking of their symptoms. This addresses the problem of the patient and improve the patients engagement with the system.

So in conclusion we can say that healthcare chatbots play a major role in healthcare domain and it has become very essential tool for both doctors and patients as well. Due to the and increase in technological advancements we can determine that the future of technology is AI/ML and nowadays everyone is using these technologies in some or the other way. Around everyone in the age group have a fair idea of using a smartphone/ laptop, it is safe to assume that if one wants to widespread some knowledge or gain knowledge then the best tool in the current era is smartphones and laptops. If someone were to seek for help then he/she will reach to the devices that are with them all the time and search for the desired results. So in any emergency or medical related application this would prove very beneficial to just hold your device and tell about the symptoms and then it would give what disease is the person facing and give it's description, more symptoms, what was the cause and how severe it is and some precautionary measures to tackle that.

Our take on this project is that as we all know that around 20-25% of Indian population are illiterate and they would not be able to interact with the healthcare chatbots that are present currently. So this would be our main feature and we would like to implement new features like feedback and communities that will help the database in a way that it has a concept of customers and professional. SO this would affect as if some data is incorrect and the customer wants to add some suggestion or wants to report something new then he would raise a ticket or a blog and then the professionals that are doctors and researchers would review to their request and make changes according to that. This will help the dataset of this project to grow exponentially and become accurate and will cover more types of diseases over time.

REFERENCES

1. [Hemavathi S](#); [Sam Abhishek A C](#); [Sai Kaushik J](#); [Sai Deepak D](#); [K. Latha](#); [K. Jayasakthi Velmurugan](#), "Medical Assistant App", [Pedro M. Martins](#); [João L. Vilaça](#); [Nuno S. Dias](#), "A study about current digital assistants for healthcare and medical treatment monitoring"
- [Ruhul Amin](#); [Troyee Sharmistha Saha](#); [Md. Faiyaz Bin Hassan](#); [Mahfuza Anjum](#); [Md. Ishfaq Tahmid](#), "IoT Based Medical Assistant for Efficient Monitoring of Patients in Response to COVID-19"
- [Sachit Mahajan](#); [C.M. Vidhyapathi](#), "Design of a medical assistant robot"
- [Deshani Warnakulasuriya](#); [Tharushi Dewangi](#); [Navodya Sewwandi](#); [Minoli Rathnayake](#); [Nuwan Kodag](#), "Mobile Medical Assistant System for Laboratory Report Analysis and Medical Drug Identification"
- [J Kanimozhi](#); [G. Preethi](#); [N Mohanasuganthi](#); [S. Abi Ayshwariya](#); [Lijetha C Jaffrin](#), "Virtual Medical Assistant System for Diseases Detection using Machine Learning"
- [B G Mamatha Bai](#); [Preethi Prerana](#); [Akash A Benki](#); [R Rakesh](#), "Virtual Medical Assistant in English and Kannada Languages"
- [Meera Gandhi](#); [Vishal Kumar Singh](#); [Vivek Kumar](#), "IntelliDoctor - AI based Medical Assistant"
- 9) [W.D. Yu](#); [A. Ramani](#), "Design and implementation of a personal mobile medical assistant"
- 10) [Kashif Anjum](#); [Mohd Sameer](#); [Santosh Kumar](#), "AI Enabled NLP based Text to Text Medical Chatbot"
- [Gagandeep Kaur](#); [Amit Sharma](#), "AI/ML Sentiment Analysis Model for Medical Chatbot: A Review"
- [Sanjay Chakraborty](#) [Hrithik Paul](#) [Sayani Ghatak](#) [Saroj Kumar Pandey](#) [Ankit Kumar Kamred](#) [Udham Singh Mohd Asif Shah](#) "An Ai-Based Medical Chatbot Model For Infectious Disease Prediction"
- [Atulya M. Nayar](#); [Zulfa Attar](#); [Shabbir Kachwala](#); [Tanaya Biswas](#); [Sharmila K. Wagh](#), "Dost-Mental Health Assistant Chatbot"
- [R Kumaraswamy](#); [Sudhanva G R](#); [Jeevan Gowda N](#); [Kantharaju; Chandrashekharaiyah R](#), "A Medical Chatbot with Object Detection Feature for Improved Patient Care"
- [M. SureshKumar](#); [Niranjan Kumar S](#); [Chris Joel S](#); [Lokesh V](#), "HELTRAK - A Medical Application with Chatbot Based on AI"
- [Prathamesh Kandpal](#); [Kapil Jasnani](#); [Ritesh Raut](#); [Siddharth Borge](#), "Contextual Chatbot for Healthcare Purposes (using Deep Learning)"
- [Md. Moshir Rahman](#); [Ruhul Amin](#); [Md Nazmul Khan Liton](#); [Nahid Hossain](#), "Disha: An Implementation of Machine Learning Based Bangla Healthcare Chatbot"
- [Pedro M. Martins](#); [João L. Vilaça](#); [Nuno S. Dias](#), "A study about current digital assistants for healthcare and medical treatment monitoring"
- [Suprabha Swain](#); [Sneha Naik](#); [Apoorva Mhalsekar](#); [Harshada Gaonkar](#); [Deepmala Kale](#), "Healthcare Chatbot System: A Survey"
- [Achuthan. S](#); [Balaji. S](#); [Thanush. B](#); [R. Reshma](#), "An Improved Chatbot for Medical Assistance using Machine Learning"
- [Divya Madhu](#); [C.J. Neeraj Jain](#); [Elmy Sebastain](#); [Shinoy Shaji](#); [Anandhu Ajayakumar](#), "A novel approach for medical assistance using trained chatbot"